Nov. 1994
No. 60096

JVC Service Manual

3-CCD COLOR VIDEO CAMERA
WITH S-VHS RECORDER

MODEL GY-X2B

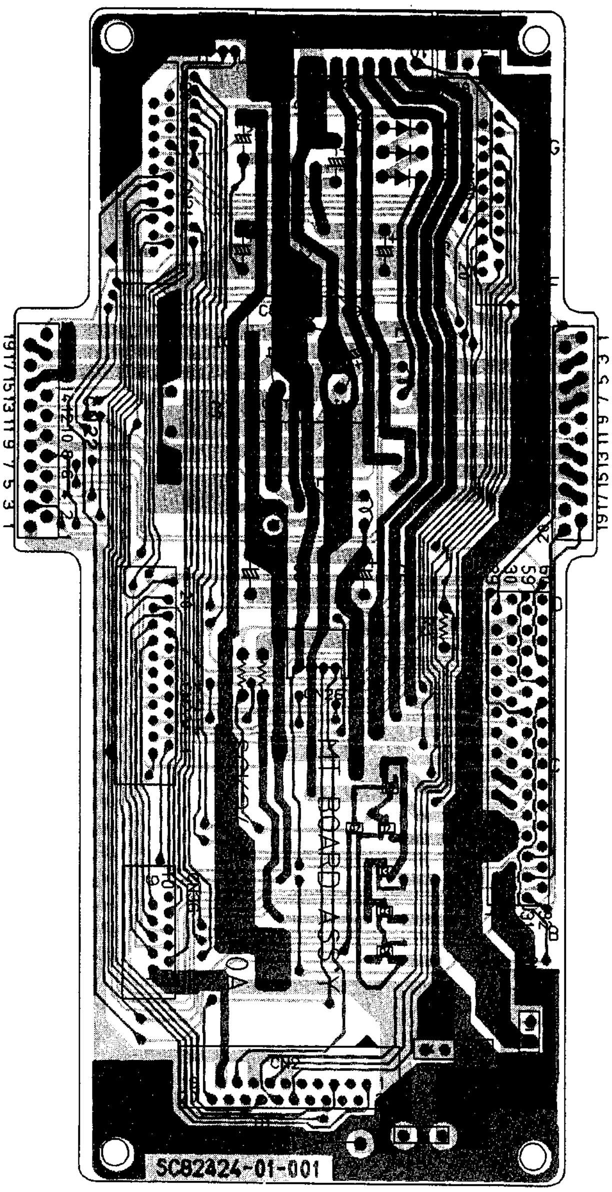
VICTOR COMPANY OF JAPAN, LIMITED

CORRECTION OF GY-X2B SERVICE MANUAL

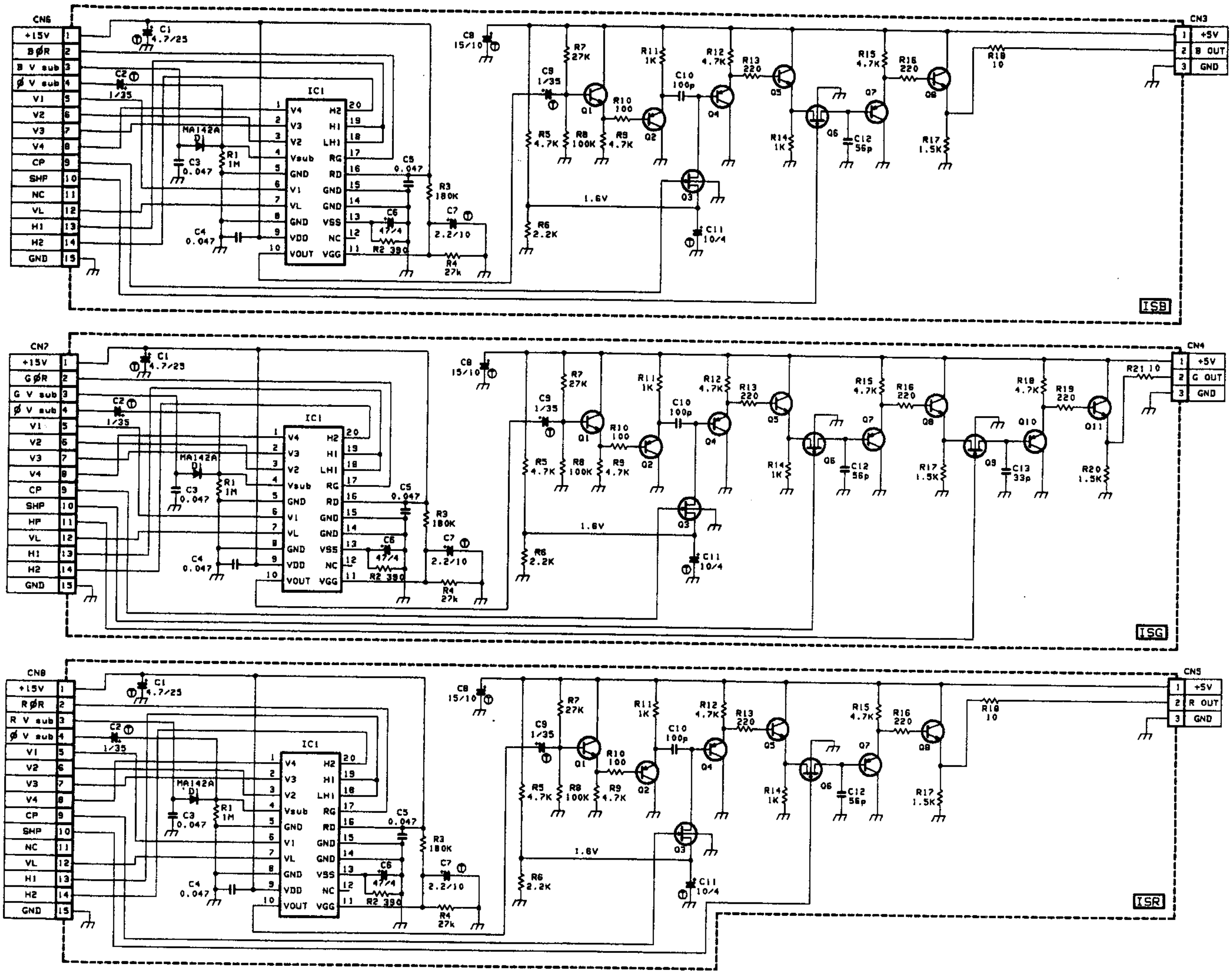
SECTION 3

- 3.15 ISB/ISG/ISR BOARD SCHEMATIC DIAGRAM
- 3.25 CP BOARD SCHEMATIC DIAGRAM
- 3.30 MT BOARD
- 3.31 OVERALL WIRING
  (Include MT, REG, LE, SW1-SW5, BNC Board Schematic Diagram)

3.30 MT BOARD


19 17 15 13 11 9 7 5 3 1
1 3 5 7 9 11 13 15 17 19
MT BOARD ASSY
5C82424-01-001

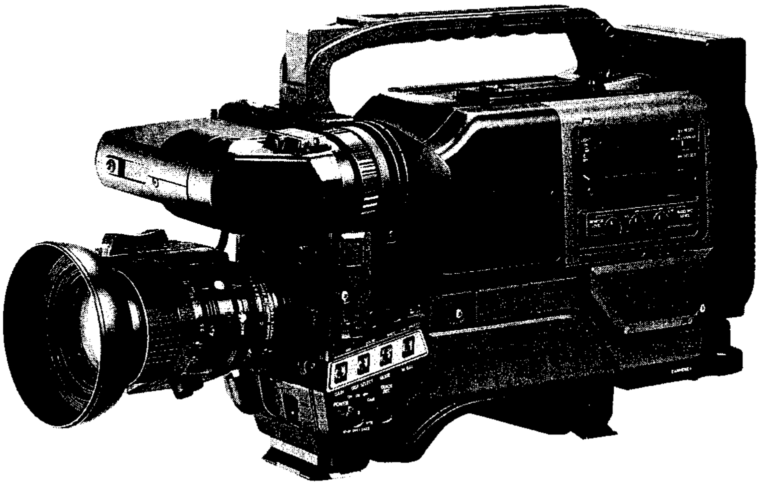
3.15 ISB/ISG/ISR BOARD SCHEMATIC DIAGRAM


CN6
+15V
BØR
B V sub
Ø V sub
V1
V2
V3
V4
CP
SHP
NC
VL
H1
H2
GND
C1 4.7/25
C2 1/35
MA142A D1
C3 0.047
R1 1M
C4 0.047
IC1
V4
V3
V2
Vsub
GND
V1
VL
GND
VDD
VOUT
H2
H1
LH1
RG
RD
GND
GND
VSS
NC
VGG
C5 0.047
C6 47/4
R2 390
R3 180K
C7 2.2/10
R4 27k
C8 15/10
C9 1/35
R5 4.7K
R6 2.2K
R7 27K
R8 100K
R9 4.7K
R10 100
R11 1K
C10 100p
R12 4.7K
R13 220
R14 1K
C12 56p
R15 4.7K
R16 220
R17 1.5K
R18 10
C11 10/4
1.6V
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
CN3
+5V
B OUT
GND
ISB
CN7
GØR
G V sub
HP
CN4
G OUT
Q9
Q10
Q11
C13 33p
R18 4.7K
R19 220
R20 1.5K
R21 10
ISG
CN8
RØR
R V sub
CN5
R OUT
ISR

2SA1532(BC)	Q2,Q4
2SC3930(BC)	Q1,Q5,Q8,Q11
3SK157	Q3,Q6,Q9
2SA1622(M6)	Q7,Q10

No. 60096

JVC Service Manual



MODEL GY-X2B

TABLE OF CONTENTS

Section **Title** **Page**

■ **Important Safety Precautions**

■ **Instructions**

< CAMERA HEAD SECTION >

1. SERVICE CAUTIONS AND DISASSEMBLY .... 1 - 1
2. ELECTRICAL ADJUSTMENT .... 2 - 1
3. EXPLODED VIEWS AND PARTS LISTS .... 3 - 1
4. CHARTS AND DIAGRAMS .... 4 - 1
5. ELECTRICAL PARTS LIST .... 5 - 1
6. REPACKING .... 6 - 1

< VTR SECTION >

1. SERVICE CAUTIONS AND DISASSEMBLY
2. MECHANICAL ADJUSTMENT
3. ELECTRICAL ADJUSTMENT

} Refer to the BR-S422's Service Manual

4. DIAGRAMS AND CIRCUIT BOARDS .... 8 - 1
5. EXPLODED VIEWS AND PARTS LIST .... 9 - 1
6. ELECTRICAL PARTS LIST 10-1

COPYRIGHT © 1994 VICTOR COMPANY OF JAPAN, LTD.

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

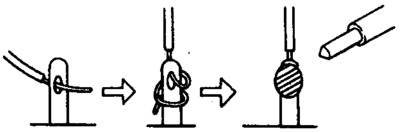


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

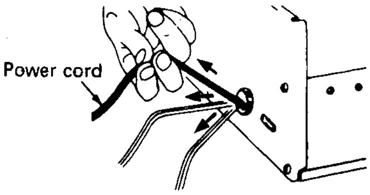


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

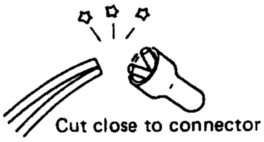


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

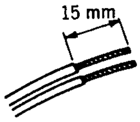


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

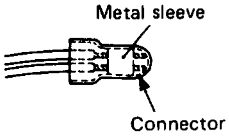


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

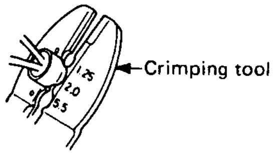


Fig. 6

(5) Check the four points noted in Fig. 7.

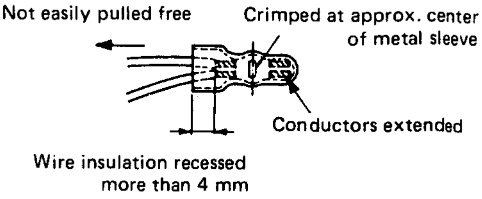

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

●Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

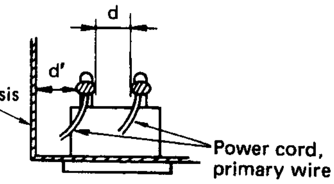


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

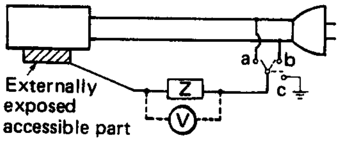


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

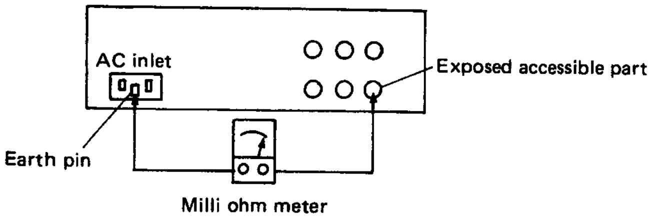


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

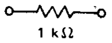
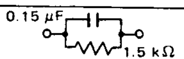
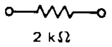
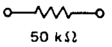
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan		i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada		i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia		i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
			i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC Instructions

3-CCD COLOR VIDEO CAMERA WITH S-VHS VTR

GY-X2B

QUICK USE GUIDE Page

Table of Contents 2
Index 51
Adjustment before Shooting 29
- Back Focus 30
- Internal Filter 7, 31
- VTR Setup/Tape Format 32
- White Balance/FAW 31

Shooting Operation

- Basic Shooting 33
- Edit Point Search 37
- Playback and Tracking 36
- Quick Recording
  - (ALC + FAW + Auto Iris + Record) 35

In Case of Difficulties 49

Advanced Functions

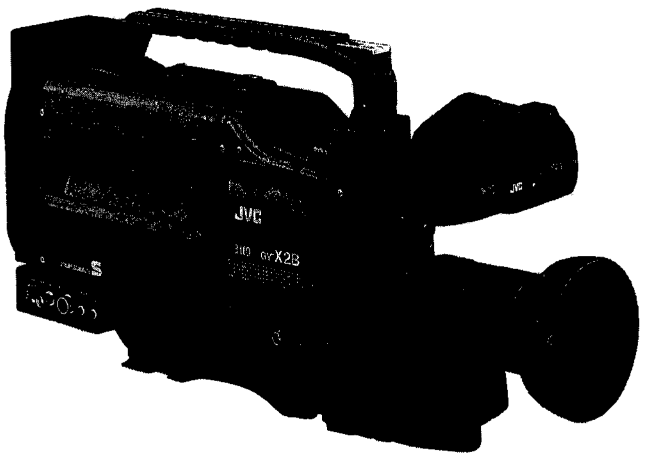
- **VTR** : Auto/Quick Editing 38
  - Insert Editing 39
  - Review Playback 38
  - Time Code Generator (SA-R200) 44
- **Camera** : Electronic Shutter 42
  - Normal Auto White Balance 31
  - Genlock 43
  - Iris Auto, Manual, Compensation 41
  - LoLux 40
  - Variable Scan 42
  - Zebra Exposure Indication 44

Camcorder Indications, Controls, Connectors

- Power/Operate, Overview 6
- Breaker 10
- Camera Controls 8
- VTR Controls 10
- VTR Set Up 12
- VTR Indicators 14
- Audio Monitor, Control, Indicators 14, 20
- On Screen Status and Auto Display 20
- Input/Output : Video, Audio, Power 16
- Camcorder Front 7
- Lens 18
- Viewfinder 19
- Warning Functions 22-23

Preparation/Installation 24-29
- Cassette Loading, Eject 29
- Lens Mounting 25
- Power, Battery/AC Adapter 27
- Microphones 25-26
- Tripod Mounting 28
- Viewfinder 24

Specifications, Accessories, Dimensions 50-52



The photograph shows the GY-X2B video camera with an optional lens (YH13X7.5K12).

For Customer Use:
Enter below the Serial No. which is located on the top frame. Retain this information for future reference.

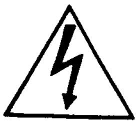
Model No. GY-X2B

Serial No. ______

WARNINGS

CAUTION
RISK OF ELECTRIC SHOCK.
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

LITHIUM BATTERY REPLACEMENT MARKING
REPLACE BATTERY WITH MATSUSHITA ELECTRIC (OR PANASONIC) CR2025. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

LITHIUM BATTERY DISPOSAL MARKING
WARNING – THE BATTERY USED IN THIS DEVICE MAY PRESENT A FIRE OR CHEMICAL BURN HAZARD IF MISUSED. DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 100°C (212°F) OR INCINERATE.
DISPOSE OF USED BATTERY PROMPTLY.
KEEP AWAY FROM CHILDREN.
DO NOT DISASSEMBLE AND DO NOT DISPOSE OF IN FIRE.

Information for Canada
This product complies with D.O.C limits (C.R.C., C. 1374) pertaining to class B digital apparatus.

Renseignement pour Canada
Ce produit est conforme aux normes du M.D.C. (C.R.C., ch. 1374) s'appliquant aux appareils numériques de classe B.

POWER SYSTEM
This color video camera should be used with 12 V DC only.

CAUTION:
To prevent electric shocks and fire hazards, do NOT use other than specified power source.

Système d'alimentation
Cette caméra vidéo couleur ne doit étre utilisée que sur tension continue de 12 V.

Attention:
Pour éviter tout risque d'incendie ou d'électrocution, n'utilisez aucune autre source d'alimentation.

Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

CONGRATULATIONS

Thank you for purchasing the JVC GY-X2B 3-CCD Full Size Professional S Camcorder.
To gain maximum benefit from the camera, it is suggested that you study this booklet carefully. After reading, retain it for future reference.

FEATURES

- S-VHS High-Resolution Pictures
  S-VHS recording circuitry for high-quality pictures with horizontal resolution of more than 400 lines.
- Hi-Fi Stereo Sound
  With rotary FM Hi-Fi audio heads, the GY-X2B offers Hi-Fi stereo sound recording with superior frequency response, greater dynamic range, and improved wow & flutter performance. 2-channel linear audio with Dolby* noise reduction system is also provided.
  * Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corportion. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Rugged Diecast Body
  Rugged integrated construction with newly-designed diecast aluminum body for improved durability and reliability.
- Easy-to-see LCD Panel with Backlight
  A built-in LCD panel is provided for display of lap time/tape counter, remaining tape time, audio levels, battery duration, hour meter, warning indications. Backlight capability allows easy checking even in dimly-lit places.
- Rotary erase head and AEF function permit noiseless assemble editing.
- Auto Review function for quick recording review
- Insert recording function for replacing video and Hi-Fi sound on a pre-recorded tape
- Built-in speaker for sound monitoring.
- With the optional SA-R200 time code generator, time code recording is possible.
- JVC utilizes newly developed broadcast 1/2 inch CCDs with high 750 line resolution, high sensitivity of F8 at 2000 lx and a superb signal to noise ratio of 62 dB at 0 dB gain.

- LOLUX captures scenes never before possible because of low lighting conditions.
  In this mode the CCD chip is maximized for low light sensitivity. This Super Sensitivity is ideal for special shooting conditions with almost no lighting.
  Good color balance is maintained even down to 1.5 lx illumination.
- Quick record mode for emergency recording with a single touch of a button. Exposure is controlled automatically with variable shutter, gain and iris. White balance is also continuously adjusted.
- Multi-Zone Auto Iris Detection Circuit
  Multi-zone iris detection circuit ensures optimum iris position even in backlit conditions or when a bright subject moves in a frame. Over-under level switchable.
- Electronic shutter with speeds of 1/100, 1/250, 1/500, 1/1000 and 1/2000 second
- Safety Zone Indication
  In addition to center mark on/off capability, safety zone indication for the 16 : 9 screen format is available.
- Zebra pattern video level indication
- The audio level is indicated in the viewfinder.
- Highly reliable XLR connectors for audio input. Input circuit utilizes balanced input system that is less affected by external noise.
- Retake function with edit searching for easy checking of recordings at normal speed
- Built-in genlock circuit for system synchronization
- With its dual output system, the camera output can be connected directly to an external recorder.
- Y/C output connector
- Earphone jack
- Color temperature conversion filters for "3200 K", "5600 K" and "5600 K + ND"
- Variable scan.
  Flicker bars in the display image of computer monitors are caused by the differing scan rate of the computer monitors. The Variable Scan function can minimize this effect by tuning the camera shutter speed to the precise scan rate of the display screen. The small increments range from 60.1 Hz to 2084.6 Hz (1/60.1 sec to 1/2084.6 sec).

CONTENTS

Page

Quick Use Guide .... Cover
Safety Precautions 2
JVC Product Safety .... Orange page
Features 2
Standard System Configuration 4

Precautions

Safety 4
Handling 4
Moisture 4
CCD 5
Gain, Noise 5
Video cassettes 5
Tape protection 5

Controls, Indicators, Connectors

Overview 6
Camera head front section 7
Camera controls 8
VTR controls 10
VTR set up controls 12
VTR indicators/Audio control 14
Input and Output: Video, Audio, Power 16
Lens (YH13X7.5K12) 18
Viewfinder 19
Status display 20
Automatic display 21

Warning functions

Camera warnings 22
VTR symptoms Indications 23

Precaution/Installation

Viewfinder 24
Lens 25

Microphones

Microphone 25
Other microphones 26

Power supply

Battery (NB-G1/Flat shape type) 27
AC adapter 27
Tripod mounting 28
Cassette loading, ejecting 29

Adjustments Before Shooting

Camera control settings for adjustment 29
Set viewfinder 30
Adjusting back focus 30
Set internal filter 31
Set white balance 31
Set up VTR 32
Format setting 32
VHS, S-VHS 32

Page

Shooting Operation

Normal shooting operation 33
Quick recording 35
Enhanced ALC system 35
Tape playback 36
Tape tracking (Playback) 36
Tape timer/Time code display 37
"Retake" Edit point search 37

Advanced Functions

VTR

Auto edit (Seamless in camera editing) 38
Auto setting (seamless, but slow) 38
Quick setting (Quick, but not seamless) 38
Effects of Quick or Auto settings 38
Auto review (Review + Auto or Quick edit ready) 38
Insert editing 39
Hour meter 40

Camera

Lolux 40

Iris

Auto/Manual iris 41
Multizone iris 41
Electronic shutter 42
Operation 42
Variable scan 42

Studio use

Connection 43
Genlock 43
Video level indication 44

SA-R200 Time code generator

Basic function 44
VITC 44
Controls/Indicators 45

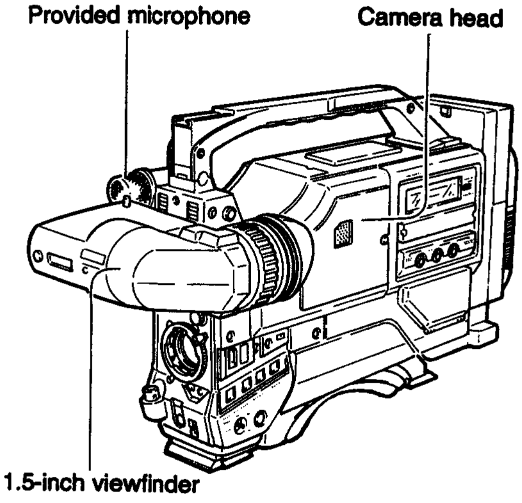
Operation

Time code setting 46
User bits 47
SA-R200 specifications 47
Remote trigger/Zoom servo control (HZ-ZS13BU) 48
JVC service function 48
In Case of Difficulties 49
Accessory list 49
GY-X2B Specifications 50
Index 51
External dimensions 52

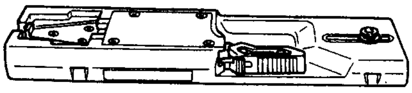
SYSTEM CONFIGURATION

The standard configuration of the GY-X2B is as shown below.

STANDARD CONFIGURATION



Tripod base KA-510



PRECAUTIONS

SAFETY PRECAUTIONS

- Use only the optional NB-G1 Battery Pack or the optional AA-P250 AC Power Adapter.
- Do not modify the unit or operate it without cover panel to prevent danger.
- When there is any abnormality (abnormal noise, smell, smoke, etc.) with the unit, immediately turn the power off and contact your nearest JVC-authorized service agent.
- Do not damage or fray the power cord. Otherwise, this will cause leakage or electrical shock.
- If the camera is not going to be used for an extended period of time, leave the power cord disconnected for reasons of safety.
- If there is a danger of being struck by lightning during outdoor shooting, evacuate to a safe place immediately.

HANDLING PRECAUTIONS

- Supply voltage
  Make sure that the power is between 11.5 V and 15 V DC. If the power voltage is too low, abnormal color and increased noise could occur. Do not exceed 15 V DC in any case, or the unit could be damaged.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise.
  In such a case, select another channel.
- Cleaning the body: Wipe body with a dry, soft cloth (such as cheesecloth). When it is extremely dirty, soak the cloth in a solution of neutral detergent, wring it out and then wipe.
  To prevent deformation of the body, etc. and to avoid operation hazards, do not allow volatile liquids such as benzine and thinner to touch the body, and do not wipe it with a cloth soaked in such a liquid.
  If the equipment is soiled with water, oil, solvent, etc., wipe over with soft cloth or cotton first, then clean with gauze, etc. soaked in denatured alcohol.

VTR

- Influence of vibrations
  When tapes are played back in a place subject to excessive vibrations, color pictures may not be obtained.

- **Moisture condensation prevents use of the unit.**

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the recorder LCD and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

Operate Off Circuit with Battery Operation

- When the battery is depleted in battery-powered operation, the OPERATE indicator starts blinking with red color and a warning beep is heard from the earphone. If you continue operation, the Operate Off function is executed automatically to protect the unit. If this happens, replace the battery with a fully-charged one.
- If the Operate Off function is activated in the Record-Pause mode, the tape remains loaded due to the auto recording lock function.

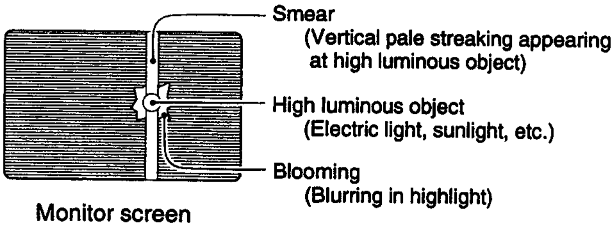
LENS

- The camera lens should be protected externally with a Clear or UV filter against accidental scratching, touching or dirt. The external lens cap should be used whenever possible.
- When the lens is changed, take special care to avoid contaminating the inner lens surface and camera gate/optical block area with moisture or dust.

CAMERA

CCD Smear and Blooming

- Due to the physical structure of the CCD in this camera it is possible to induce vertical streaking or smear when shooting an extremely bright light source.
- Another effect is the expansion of light around a bright light or object called Blooming.
  Just as you protect your image against lens flare (internal lens reflections); please be careful when shooting a bright light source.


Smear
(Vertical pale streaking appearing at high luminous object)
High luminous object
(Electric light, sunlight, etc.)
Blooming
(Blurring in highlight)
Monitor screen

Gain, Noise

- Higher levels of output gain result in a decrease in the signal to noise ratio, possibly resulting in a noisy picture.

Moire or Aliasing

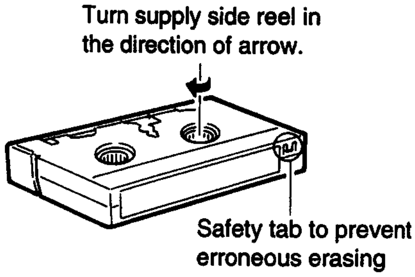
- Shooting stripes or fine patterns may cause a jagged effect or a banding in fine mesh patterns.
  Try repositioning the lens zoom to change the frequency of the detail information and eliminate the distortions.

● High Temperatures

- High temperatures can cause CCD sensor pixels to malfunction with the effect of white dots in the image. This condition could damage the CCD, and certainly raises the "fixed pattern" noise level that CCDs have thus giving a noisy picture.

VIDEO CASSETTE HANDLING

- The GY-X2B employs only cassette carrying the S-VHS and the VHS marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the supply gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.
- It may not be possible to record on the first 5-second section of a new tape due to winding margin.


Turn supply side reel in the direction of arrow.
Safety tab to prevent erroneous erasing

Storage of Cassettes

- Avoid exposing the cassettes to direct sunlight, keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them verrtically.

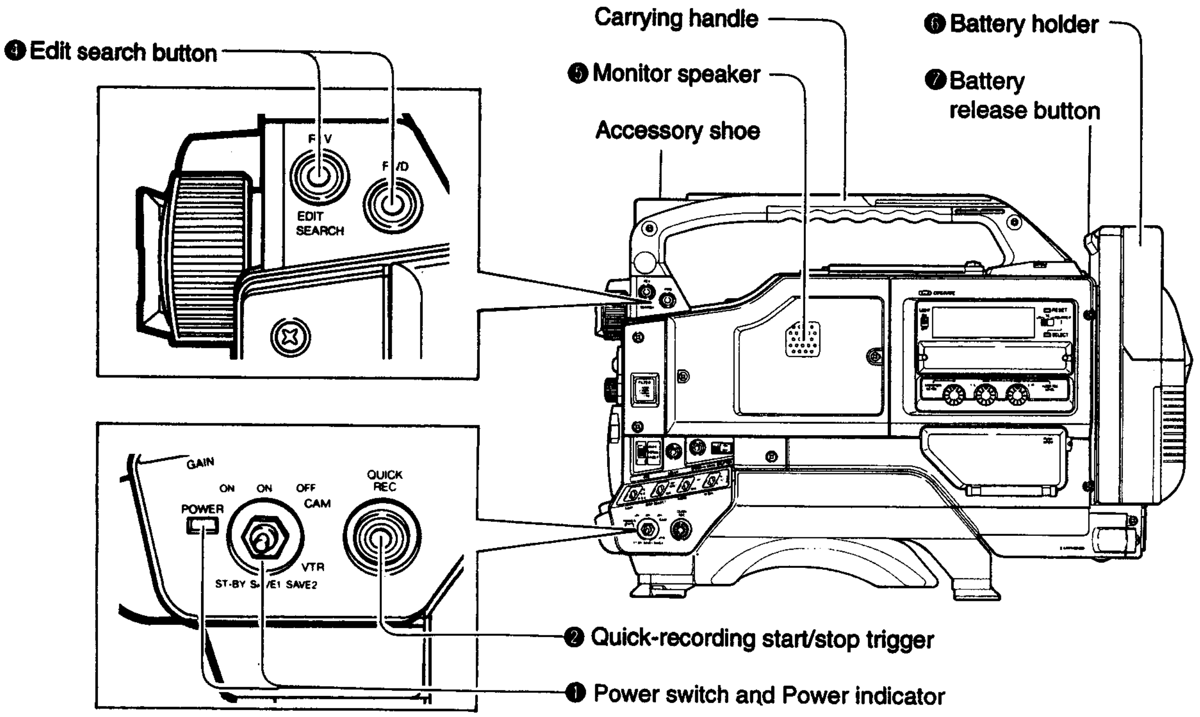
Tape Protection

- Do not leave the unit in the Record-Pause mode for too long to avoid discharging the battery and to protect the tape.
- When using this unit as a camera alone, remove the cassette to protect the tape.
- To protect the tape in the Record-Pause mode, tape tension is slackened automatically and, after about 30 minutes, drum rotation stops and then, "OPERATE" LED will be blink with green color.
- To re-start recording, press the REC button, or turn the camera section's operation switch in the order of "VTR ST-BY" – "SAVE1" – "ST-BY" to engage the Record-Pause mode.
- During extended still playback, tape action is as follows.

Elapsed time	Tape movement
Approx. 3 min. 30 sec.	Advances a few frames.
Approx. 7 min.	Advances a few frames.
Approx. 10 min. 30 sec.	Stops completely.

CONTROLS, INDICATORS AND CONNECTORS

OVERVIEW


❹ Edit search button
F V
F /D
EDIT SEARCH
Carrying handle
❺ Monitor speaker
Accessory shoe
❻ Battery holder
❼ Battery release button
GAIN
ON ON OFF
POWER
CAM
VTR
ST-BY S /E1 SAVE2
QUICK REC
❷ Quick-recording start/stop trigger
❶ Power switch and Power indicator

❶ **Power switch and Power indicator**
Switches the camera section's power on/off and switches the VTR section's power save modes.

Position		Power indicator	Camera	VTR	Recording	Quick recording	VTR display
CAM	VTR						
ON	ST-BY	Lights	Yes	REC PAUSE	Yes	Yes	Yes
ON	SAVE 1	Lights	Yes	STOP	No	Yes	Yes
OFF	SAVE 2	Off	No	STOP	No	No	No

❷ **[QUICK REC] Quick-recording start/stop trigger**
Use this button as a quick-recording start/stop trigger.
Recording starts immediately when this button is pressed, with ALC and auto-iris forcibly engaged. White balance will also be automatically adjusted accordingly. In this mode, the electronic shutter and variable scan mode cannot be used. Variable shutter is automatically engaged.
Pressing this button again or button ❸ releases the quick-recording mode and engages the Record-Pause mode. Use this function only in an emergency.

Allow 10 seconds or more after the power has been switched on, otherwise this function will not operate correctly.

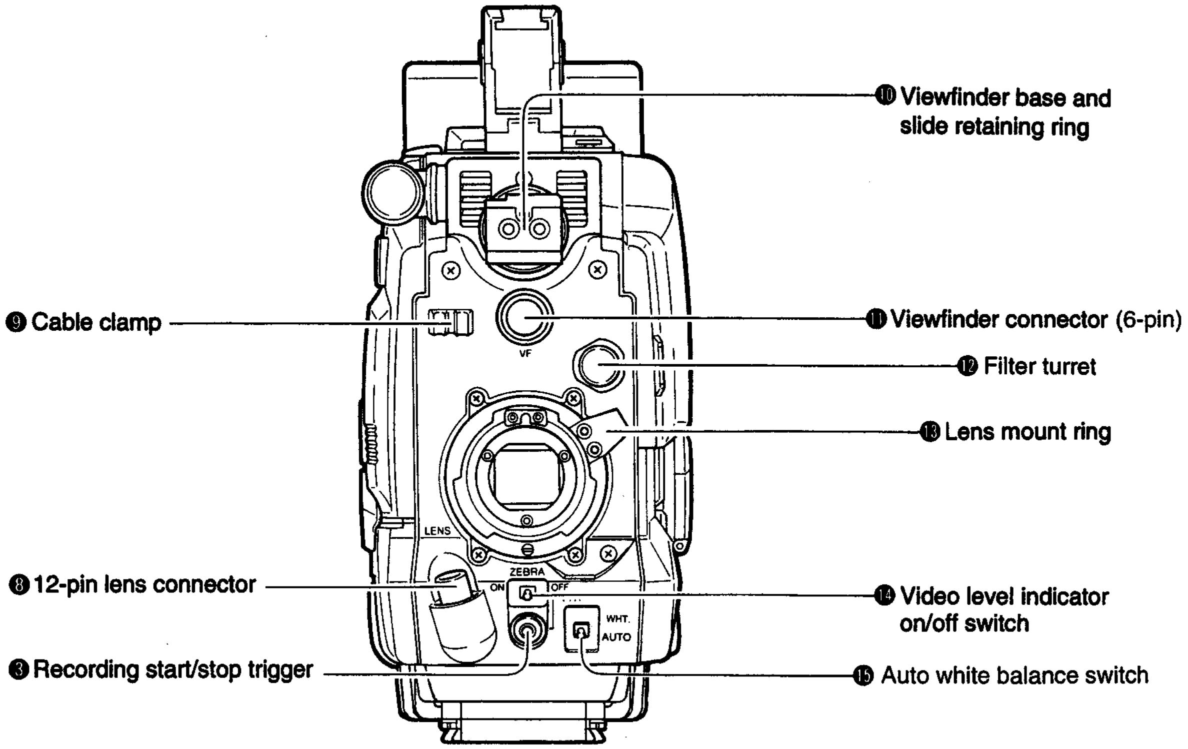
❸ **[VTR] Recording start/stop trigger**
Use this button located on the camera head front section and the lens as a normal shooting start/stop trigger.
Recording will start about 2 seconds after the button has been pressed. Pressing it again engages the Record-Pause mode. (See illustration on next page.)

❹ **[EDIT SEARCH] Edit search buttons**
Allow forward or reverse search at normal speed while in the Record-Pause mode. Use this function to determine the start point of a retake. The search picture can be viewed on the viewfinder screen.

REV : For reverse search at normal speed.
FWD : For forward search at normal speed.

❺ **Monitor speaker**
Outputs sound according to the setting of the AUDIO INPUT SELECT, AUDIO OUT, and MONITOR OUT switches. In the Playback mode, the tape's playback sound can be monitored. Sound level can be adjusted by the MONITOR LEVEL control. Warning beeps are also emitted from this speaker together with the monitor sound. (Warning sound level cannot be adjusted.)
Connecting an earphone to the EARPHONE jack defeats sound output from the speaker.

CAMERA HEAD FRONT SECTION


⓾ Viewfinder base and slide retaining ring
❾ Cable clamp
⓫ Viewfinder connector (6-pin)
⓬ Filter turret
⓭ Lens mount ring
❽ 12-pin lens connector
⓮ Video level indicator on/off switch
❸ Recording start/stop trigger
⓯ Auto white balance switch
VF
LENS
ZEBRA
ON
OFF
WHT.
AUTO

❻ Battery holder
Shown here is the standard battery holder. This can be used for Flat shape type and JVC NB-G1 batteries.
The 4-pin 12 V DC connector has priority over this battery holder.
Other manufacturer's battery holders can be attached instead.

❼ Battery release button
Open the cover while this button is pressed.

❽ [LENS] 12-pin lens connector
For use with a lens having a 12-pin connector.

Pin No.	Function	Pin No.	Function
1	RET switch	7	IRIS position
2	VTR start	8	—
3	GND	9	—
4	LENS AUTO	10	—
5	IRIS control	11	—
6	12 V DC	12	—

❾ Cable clamp
For fixing lens cable, etc.

⓾ Viewfinder base and slide retaining ring
Attach the 1.5-inch viewfinder to this base and secure it with the slide retaining ring.

⓫ [VF] Viewfinder connector (6-pins)
Connect the viewfinder cable.

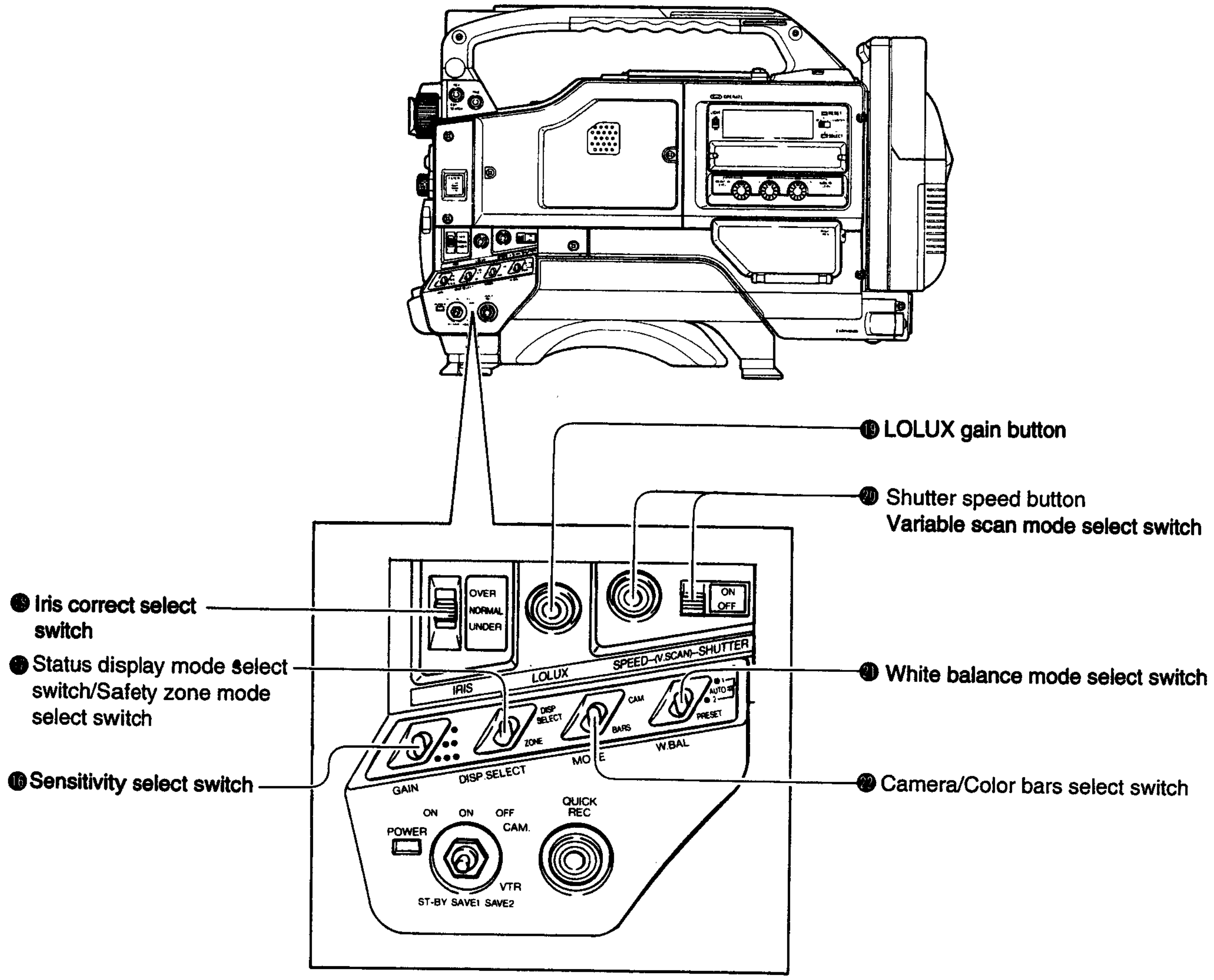
⓬ [FILTER] Filter turret
Selects the filter setting for color conversion and ND.
1. **(3200K):** For shooting indoors, or outdoors when illumination is insufficient.
2. **(5600K):** For shooting outdoors.
3. **(5600K and ND filter):** For shooting outdoors on sunny days.

⓭ Lens mount ring
For retaining the lens.

⓮ [ZEBRA] Video level indicator on/off switch
Set this to ON to obtain the video level indication on the viewfinder screen.

⓯ [AUTO] Auto white balance switch
Push the switch toward "WHT" to initiate the auto white balance procedure. The switch need not be pushed continuously.

CAMERA CONTROLS


⑱ Iris correct select switch
⑰ Status display mode select switch/Safety zone mode select switch
⑯ Sensitivity select switch
⑲ LOLUX gain button
⑳ Shutter speed button
Variable scan mode select switch
㉑ White balance mode select switch
㉒ Camera/Color bars select switch
OVER
NORMAL
UNDER
IRIS
LOLUX
SPEED-(V.SCAN)-SHUTTER
ON
OFF
GAIN
DISP SELECT
ZONE
CAM
BARS
MODE
AUTO
PRESET
W.BAL
ON
ON
OFF
CAM.
POWER
VTR
ST-BY SAVE1 SAVE2
QUICK REC

⑯ [GAIN] Sensitivity select switch
Electronically boosts light sensitivity when there is insufficient illumination on the subject.

0 dB : Normal

9 dB : Boosted to approximately 3 times as much

18 dB: Boosted to approximately 8 times as much

⑰ [DISP. SELECT] Status display mode select switch
Switches the viewfinder indications of the camera's setting status. Push it up to switch the displays as follows.

→ Display 0 → Display 1 → Display 2 ⏎

See "Status Display" on page 20.

[ZONE] Safety zone mode select switch
Selects the safety zone indication on the viewfinder screen. Push it down to switch the safety zone indications as follows. "OFF" (no indication), to "MODE1", "MODE2" and "MODE3". See "Safety Zone Indication" on page 21.

⓲ [IRIS] IRIS CORRECT SELECT switch

IRIS switch can be used to adjust the exposure system to over or under exposure by about a half F stop.

OVER	:	for continued over exposure
NORMAL	:	for normal exposure
UNDER	:	for continued under exposure

Many conditions can cause the detection mode to expose high or low, such as back lit or spot lit situations.

⓳ [LOLUX] LOLUX gain button

LOLUX gain gives extremely low light level sensitivity for special applications. The spec is the equivalent of F1.4 at 1.5 lx.

LOLUX operation takes priority over normal gain operation. Pressing it again restores the previous mode. In the LOLUX mode, the ALC (automatic level control) in the Quick-recording mode is not available.

⓴ [SPEED - (V. SCAN) - SHUTTER]
Shutter speed button/Variable scan mode select switch

The OFF switch position engages the normal 1/60-second speed. Normally use this speed.

The ON switch position engages selected shutter speeds. Turning the shutter switch ON while pressing the speed button engages variable scan.

Shutter speed button:

Each time this button is pressed, the shutter speed changes to 1/100, 1/250, 1/500, 1/1000, 1/2000, then back to 1/100 second.

→ 1/100 → 1/250 → 1/500 → 1/1000 → 1/2000 →

This removes blurring when shooting fast-moving objects. To return to 1/60 second, press the switch to OFF.

- In areas with a 50 Hz power line, select "1/100" to reduce flickering under fluorescent light.
- When powered, the shutter speed remains the same as selected before the power was turned off. When restarting shooting, be sure to check the shutter speed.

Variable scan mode:

- Turning the shutter switch ON while keeping the speed button pressed engages the variable scan mode.
- To change the shutter speed, release the speed button, then press it again. Each time the button is pressed, the shutter speed changes. Keeping the button pressed automatically advances the speed.
- Even if the power is turned off, the selected shutter speed is retained in memory.
- This mode is used for shooting images on a computer monitor whose scanning speed is different from the camera's normal shutter speed. This mode covers vertical scanning frequencies ranging from 60.1 Hz to 2084.6 Hz. However, it cannot respond to monitors with slower scanning frequencies (such as 50 Hz).

• Service Information:
"AUTO 2" position can be alloted to "FAW" (Full Time Auto White) by changing the internal switch setting.
For detail, refer to "1.7 Switches on CP board - ⑥ ALC/FAW switch" in page 1-4 of the service manual.

㉑ [W. BAL] White balance mode select switch

AUTO 1, AUTO 2:	White balance is set to the memory automatically ajusted with switch ⓯.
PRESET:	White balance is set to the preset standard (corresponding to a color temperature of 3200K with filter control set to 1 and 5600 K when set to 2).

Independent white balance settings can be stored in the AUTO 1 and AUTO 2 positions.

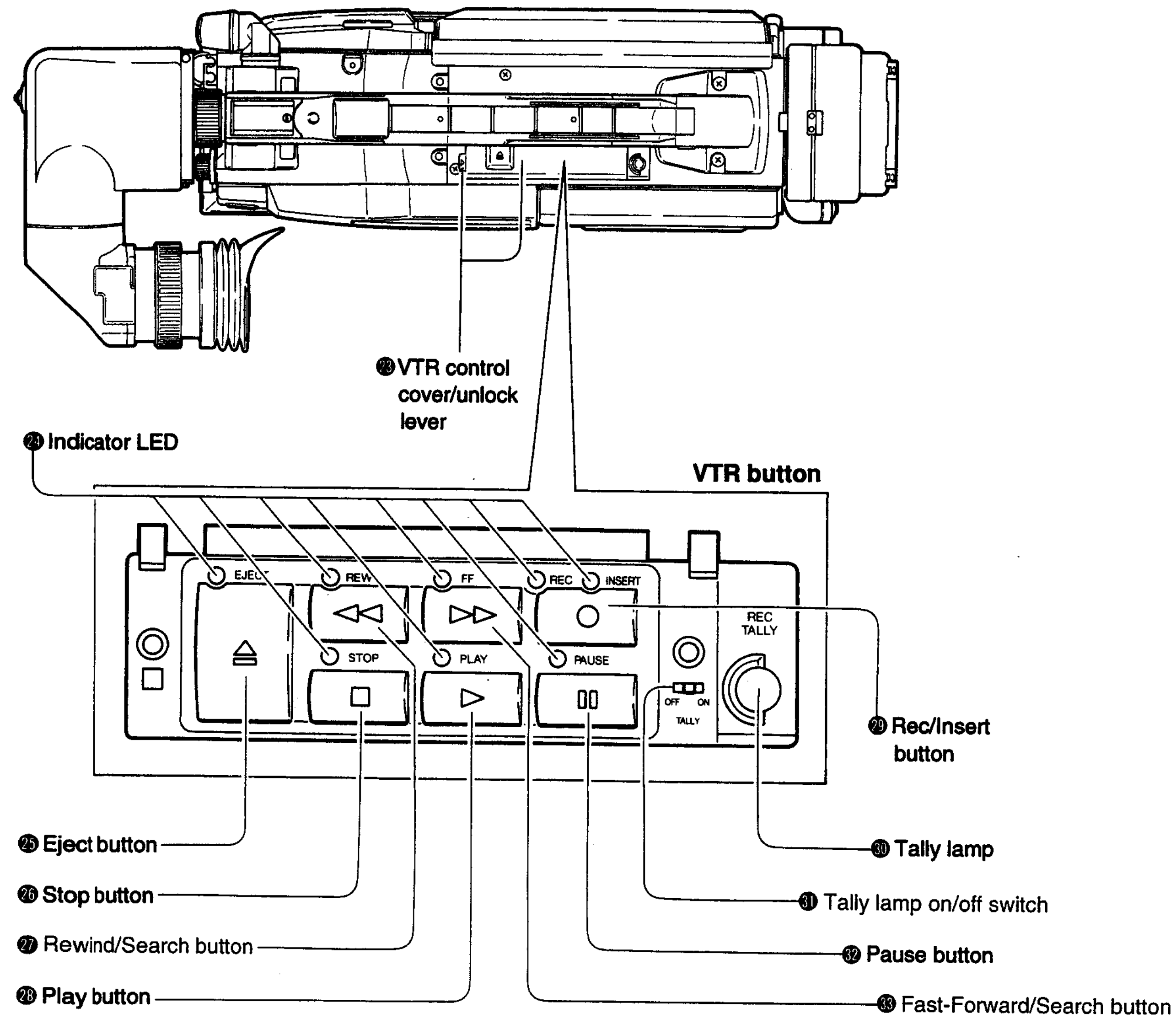
㉒ [MODE] Camera/Color bars select switch

Selects the recording or output signal.

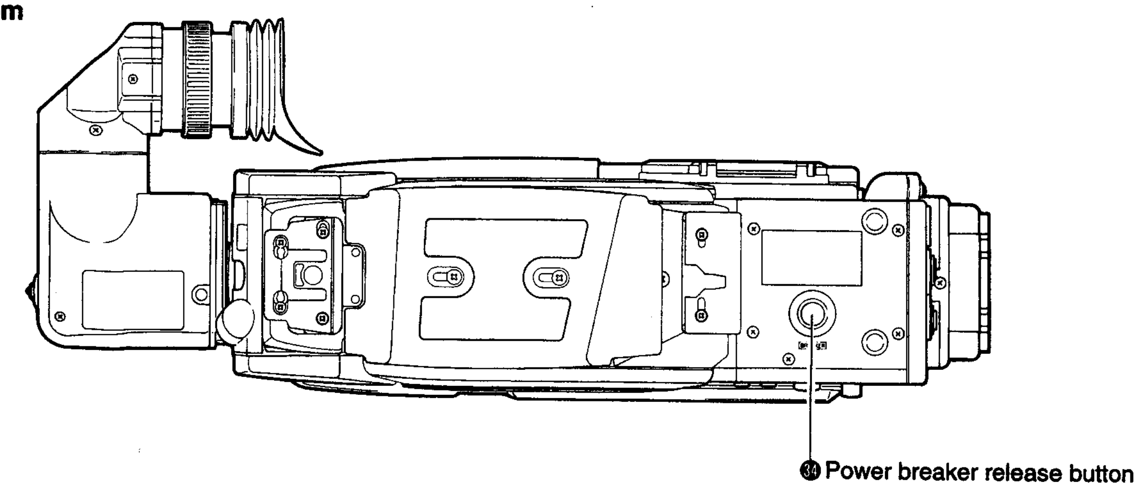
CAM : Camera signal
BARS : Color bars signal

VTR CONTROLS

Top


㉓ VTR control cover/unlock lever
㉔ Indicator LED
VTR button
EJECT
REW
FF
REC
INSERT
STOP
PLAY
PAUSE
REC TALLY
OFF ON TALLY
㉙ Rec/Insert button
㉕ Eject button
㉖ Stop button
㉗ Rewind/Search button
㉘ Play button
㉚ Tally lamp
㉛ Tally lamp on/off switch
㉜ Pause button
㉝ Fast-Forward/Search button

Bottom


㉞ Power breaker release button

㉓ VTR control cover/unlock lever
This cover prevents accidental operations while shooting and prevents entry of water droplets and dust. To open it, push the cover up while keeping the lever depressed.

Note
In order to engage the fast-forward, rewind, or play modes while in the Record-Pause mode, first press the Stop button to engage the Stop mode and then select the desired function.

㉔ LED indicators
Lights to show corresponding operation status.

㉕ [EJECT] Eject button
Press to eject the cassette. It will take about 10 seconds for the tape to be unloaded and the cassette ejected. Press this button only when the unit is in the Record-Pause and Stop mode.
The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
The EJECT button can be pressed even when the VTR section is covered. LED indicator blinks while ejection.

㉖ [STOP] Stop button
Press to cancel the Play, FF, REW, Record and Record-Pause modes.
When the cassette is loaded and the unit is in Stop mode, the LED indicator remains lit.

㉗ [REW] Rewind/Search button
Press to rewind the tape. When pressed while in the Play mode, reverse search at 5 times normal speed is engaged.
If this button is pressed and held in the Record-Pause mode, the tape is played back for review in the reverse direction at normal speed.

㉘ [PLAY] Play button
Press to play back the tape. PLAY LED indicator lights while playback operation takes place.
If it is Record-Pause mode, and press PLAY button, the VTR go to "REC" mode.

㉙ [REC-INSERT] Record/Insert button
- **Assemble Record**
  Press together with the PLAY button ㉘ to engage the Assemble Record mode. REC and PLAY LED indicators light. Press the STOP button to stop recording. To temporarily stop recording, press the PAUSE button. To re-start recording from the Record-Pause mode, press the PLAY button ㉘.

- Pressing only this button engages the Record-Pause mode.

- When using this button as a Record/Insert button, follow the procedures shown in "Insert recording" on page 39.

㉚ [REC TALLY] Tally lamp
Lights when recording starts and remains lit while recording. (Goes off when in the Record-Pause mode.)
Blinks for alarm warning.

㉛ [TALLY ON/OFF] Tally lamp on/off switch
ON : Tally lamp lights or blinks.
OFF : Tally lamp does not light.
Set to OFF to save power.

㉜ [PAUSE] Pause button
Press while in the Play mode to stop the tape temporarily; a still picture (with noise) will be obtained. This button has no effect while in the Record mode. Repeated pressing of this button plays back picture in single frame steps.

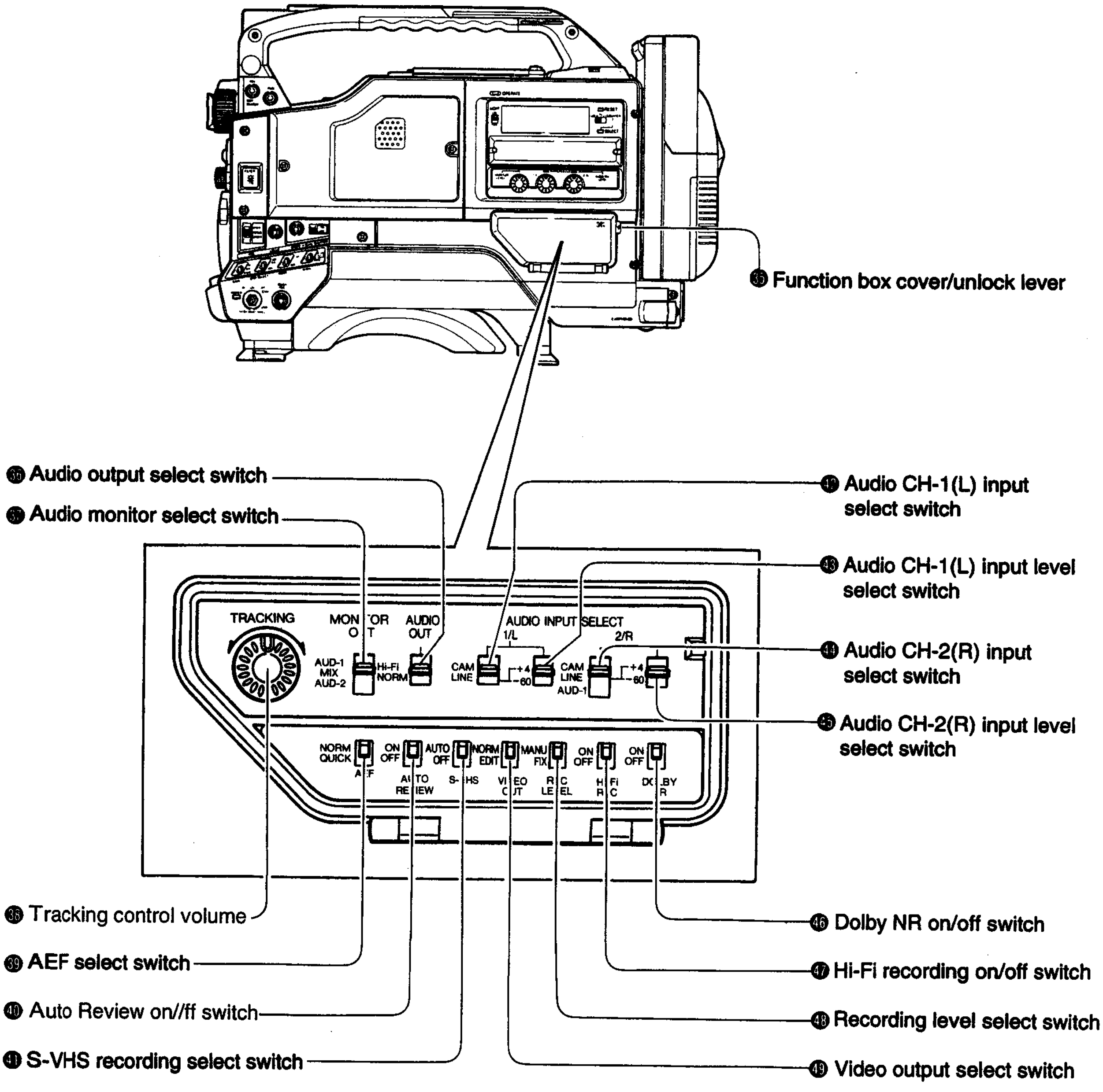
㉝ [FF] Fast-Forward/Search button
Press to fast-forward the tape. When pressed while in the Play mode, forward search at 5 times normal speed is engaged.
If this button is pressed and held in the Record-Pause mode, the tape is played back for review in the forward direction at normal speed.

Notes for VTR operation
- Because this unit is designed especially for recording, playback and still pictures may have some noise or vibrate vertically. This is not due to any defect of the unit.
- During search, pictures may contain some noise, vibrate vertically, or become monochrome. This is not due to any defect of the unit.
- With a low-capacity power unit, or a power unit whose protective circuit characteristics are not sufficient, the VTR may stop because of a shortage of power. To avoid this, use specified power units.
- No audio is available during search.
- When recording in the VHS mode on a tape previously recorded in the S-VHS mode, it is not possible to search or edit S-VHS recordings.

㉞ [BREAKER] Power breaker release button
If an excessive amount of current flows into the camera, the built-in power breaker is activated to cut the power for circuit protection. If this happens, press this button to re-supply the power.

Notes
- Before re-supplying power, be sure to check the cause of power breakdown and take appropriate countermeasures.
- If the power breaker is activated often, consult your JVC dealer.

VTR SETUP CONTROLS



㉟ Function box cover/unlock lever
㊱ Audio output select switch
㊲ Audio monitor select switch
㊷ Audio CH-1(L) input select switch
㊸ Audio CH-1(L) input level select switch
㊹ Audio CH-2(R) input select switch
㊺ Audio CH-2(R) input level select switch
TRACKING
MONITOR OUT
AUDIO OUT
AUDIO INPUT SELECT
1/L
2/R
AUD-1
MIX
AUD-2
Hi-Fi
NORM
CAM
LINE
+4
-60
CAM
LINE
AUD-1
+4
-60
NORM
QUICK
AEF
ON
OFF
AUTO REVIEW
AUTO
OFF
S-VHS
NORM
EDIT
VIDEO OUT
MANU
FIX
REC LEVEL
ON
OFF
Hi Fi REC
ON
OFF
DOLBY NR
㊳ Tracking control volume
㊴ AEF select switch
㊵ Auto Review on//ff switch
㊶ S-VHS recording select switch
㊻ Dolby NR on/off switch
㊼ Hi-Fi recording on/off switch
㊽ Recording level select switch
㊾ Video output select switch

㉟ Function box cover/unlock lever
To open the cover, pull the cover toward you while pushing the lever to the left.

㊱ [AUDIO OUT] Audio output select switch
Selects the audio output, monitor output, and level meter indication.

Hi-Fi : Outputs Hi-Fi audio.
NORM : Outputs normal audio.

㊲ [MONITOR OUT] Audio monitor select switch
Selects the audio output of the monitor speaker and earphone jack.

AUD1 : To monitor audio channel 1 (L).
MIX : To monitor mixed sound of audio channel 1 (L) and 2 (R). Mixed with each channel at 50 %.
AUD 2 : To monitor audio channel 2 (R).

㊳ [TRACKING] Tracking control volume

Adjust to minimize the noise in pictures and/or Hi-Fi audio when playing back. Normally, set to the center position.

㊴ [AEF] AEF select switch

NORM : Automatic Editing Function (AEF) is fully activated for preroll assemble editing with clean results. In this position, it takes longer to start recording from the Stop mode.

QUICK: AEF's preroll is partially activated for quick recording start. However, scene transitions may be blurred.

See "Automatic Editing Function (AEF)" on page 38.

㊵ [AUTO REVIEW] Auto Review on/off switch

ON : When the Record-Pause mode is engaged, the tape reverse plays a little, then the rewound portion (approximately 3 sec. worth) is played before entering the Record-Pause mode.
Auto Review is also activated by the lens RET switch.

OFF : The Auto Review function is not available.

See "Auto Review Function" on page 38.

㊶ [S-VHS] S-VHS recording select switch

Selects the S-VHS or VHS recording.

AUTO : Recording mode is automatically selected according to the cassette used. S-VHS is selected with an S-VHS cassette and VHS with a VHS cassette.

OFF : Set to this position to record in VHS regardless of the cassette used.

㊷ [AUDIO INPUT SELECT 1/L CAM/LINE] Audio channel-1 (L) input select switch

CAM : Record L-channel sound from the 6-pin camera microphone input (79) .

LINE : Records sound from the XLR 3-pin audio channel-1 (L) input connector (73) .

㊸ [AUDIO INPUT SELECT 1/L +4/–60] Audio channel-1 (L) input level select switch

+4 : For +4 dBs line level input

–60 : For –60 dBs microphone level input

㊹ [AUDIO INPUT SELECT 2/L CAM/LINE] Audio channel-2 (R) input select switch

CAM : Record R-channel sound from the 6-pin camera microphone input (79) .

LINE : Records sound from the XLR 3-pin audio channel-1 (R) input connector (73) .

AUD-1 : The signal selected by the AUDIO INPUT SELECT 1/L switch is recorded for monaural soundtrack.

㊺ [AUDIO INPUT SELECT 2/R +4/–60] Audio channel-2 (R) input level select switch

+4 : For +4 dBs line level input

–60 : For –60 dBs microphone level input

㊻ [DOLBY NR ON/OFF] Dolby NR on/off switch

ON : Dolby NR circuit is activated for normal audio recording and playback.

OFF : Dolby NR is off.

> **Note**
>
> The Dolby NR circuit functions only with normal audio. It does not function with Hi-Fi audio regardless of the position of this switch.

* *Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.*

㊼ [Hi-Fi REC] Hi-Fi recording on/off switch

ON : For Hi-Fi audio recording.

OFF : Hi-Fi audio recording is not available.

㊽ [REC LEVEL] Recording level select switch

MANU : Recording level of Hi-Fi and normal audio can be adjusted with the AUDIO REC LEVEL control (57) .

FIX : The recording level is set to the standard fixed gain.

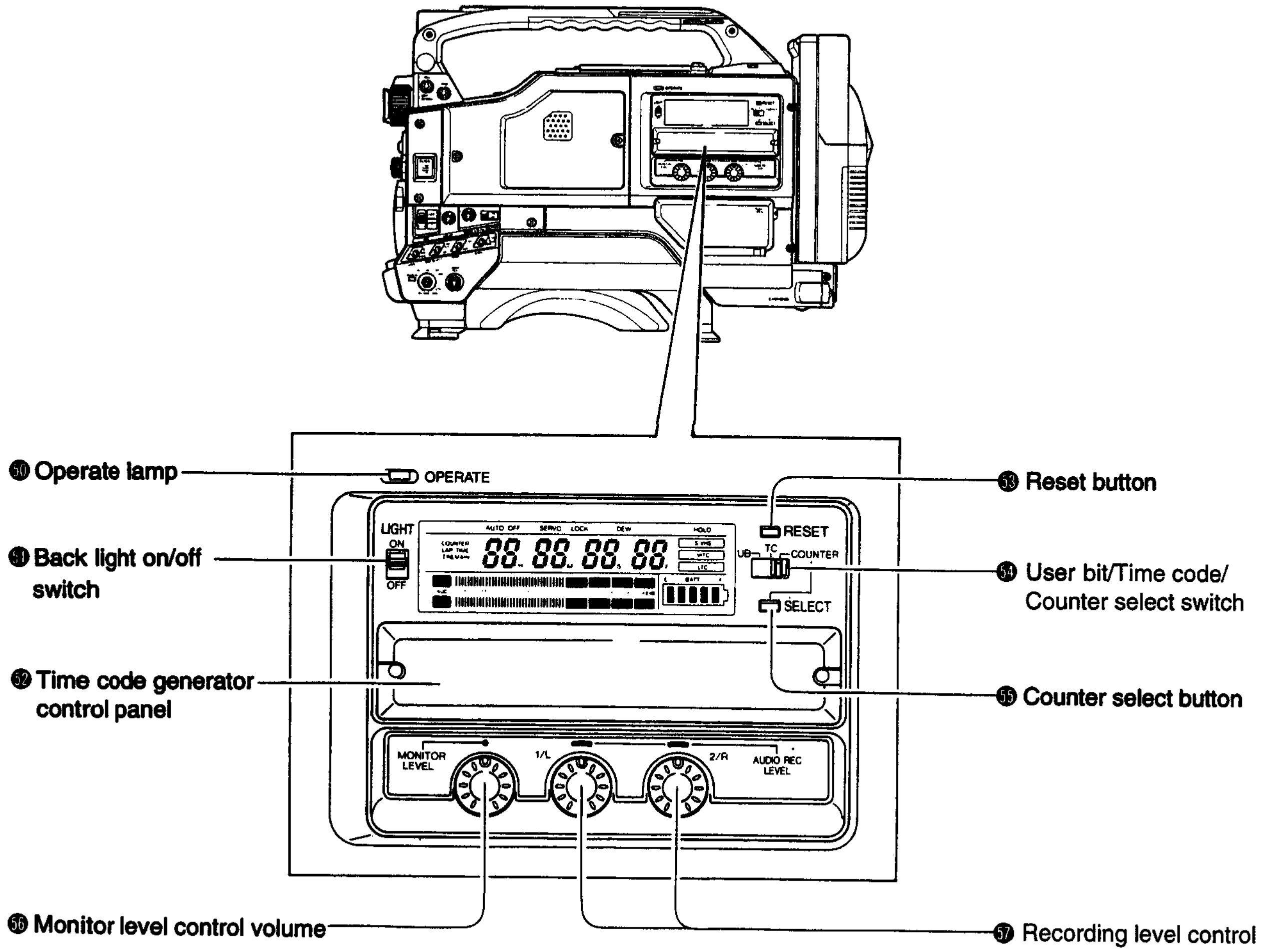
> **Note**
>
> The FIX mode is not an automatic gain control mode.

㊾ [VIDEO OUT] Video output select switch

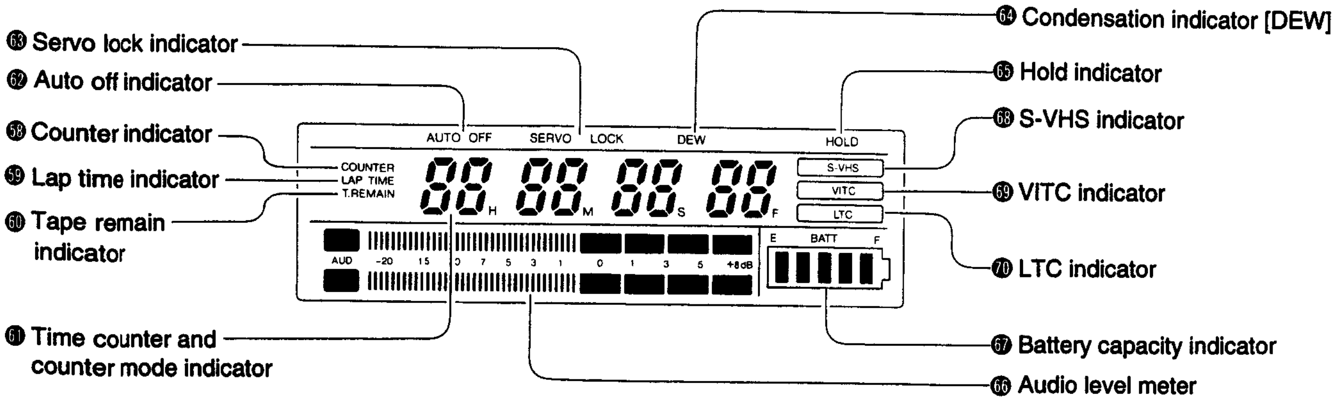
NORM : Set to this position normally.

EDIT : When using the unit as a feeder in an editing system, set to this position so that the signal by-pass the noise canceller for less deterioration in tape dubbing.

VTR INDICATORS/AUDIO CONTROL


㊿ Operate lamp
OPERATE
(51) Back light on/off switch
LIGHT
ON
OFF
(52) Time code generator control panel
RESET
(53) Reset button
UB
TC
COUNTER
(54) User bit/Time code/ Counter select switch
SELECT
(55) Counter select button
MONITOR LEVEL
1/L
2/R
AUDIO REC LEVEL
(56) Monitor level control volume
(57) Recording level control

VTR display panel


(63) Servo lock indicator
(62) Auto off indicator
(58) Counter indicator
(59) Lap time indicator
(60) Tape remain indicator
(61) Time counter and counter mode indicator
AUTO OFF
SERVO LOCK
DEW
HOLD
COUNTER
LAP TIME
T.REMAIN
H
M
S
F
S-VHS
VITC
LTC
AUD
-20 15 10 7 5 3 1 0 1 3 5 +8dB
E BATT F
(64) Condensation indicator [DEW]
(65) Hold indicator
(68) S-VHS indicator
(69) VITC indicator
(70) LTC indicator
(67) Battery capacity indicator
(66) Audio level meter

㊿ **[OPERATE] Operation lamp**
Operation : Lights green.
Warning : Lights or blinks red.
See "Warning" on page 23.

(51) **[LIGHT] Backlight on/off switch**
ON : Backlight on.
OFF : Backlight off.

To save power in battery-powered operation, set to OFF.

(52) **Time code generator control panel**
When installing the time code generator SA-R200 (optional), remove this cover, and set switches as necessary.
Note: Operation switches inside the cover are effective only when the optional SA-R200 is installed.

(53) **[RESET] Reset button**
Press to reset the tape counter and lap time readout to 00:00:00:00.

(54) **[UB/TC/COUNTER] User bit/Time code/Counter select switch**
UB : Displays User Bits.
TC : Displays the time code reading.
COUNTER : Displays tape counter, lap time counter, or remaining tape time according to the setting of the SELECT button (55) .

UB/TC display is available only when the time code generator SA-R200 (optional) is used. When it is not in use, the display shows the counter reading only.

(55) **[SELECT] Counter select button**
Each time this button is pressed, the display changes as follows.

→ COUNTER → LAP TIME → T. REMAIN ─┐

COUNTER : 4-digit tape counter reading
LAP TIME : Lap time counter reading in hours, minutes, and seconds.
T. REMAIN : Remaining tape time in hours and minutes, in 1 minute increments.

For hour meter display, unload the cassette and press SELECT and REC simultaneously. Hold for about 3 seconds. The display will change to the hour meter reading.
See "Hour Meter Display" in page 40.

(56) **[MONITOR LEVEL] Monitor level control volume**
Turn to adjust the sound output from the monitor speaker ⑤ or earphone jack (72) . Alarm sound level is fixed and cannot be adjusted by this control.

(57) **[AUDIO REC LEVEL 1/L, 2/R] Recording level controls**
Turn to adjust the recording level of Hi-Fi or normal audio channel-1 (L)/channel-2 (R), with the recording level select switch ㊽ set to MANU. Adjust the controls so that the peak level shows about 0 dB on the audio level meter (66) .

(58) **[COUNTER] Counter indicator**
Appears when the counter display (61) is in the Counter mode.

(59) **[LAP TIME] Lap time indicator**
Appears when the counter display (61) is in the Lap time mode.

(60) **[T. REMAIN] Tape remain indicator**
Appears when the counter display (61) is in the Remaining tape time mode.

(61) **Timer counter and counter mode indicator**
Displays tape counter/lap time/remaining tape time/hour meter. Also displays time code and user bits when the time code generator SA-R200 (optional) is installed.

(62) **[AUTO OFF] Auto off indicator**
Appears when problems occur with the head drum, capstan, reel rotation, mechanical position, etc.
See "Warning" on page 23.

(63) **[SERVO LOCK] Servo lock indicator**
Appears when the drum servo or capstan servo is not locked to the input video signal.
See "Warning" on page 23.

(64) **[DEW] Condensation indicator**
Appears when condensation occurs. At this time, no operation but ejection is possible. Wait for a few hours until the indicator goes off.

(65) **[HOLD] Hold indicator**
Appears when the HOLD button is pressed with the SA-R200 time code generator installed.

(66) **Audio level meter**
Displays Hi-Fi or normal audio level in recording and playback as selected by the audio output select switch ㉟ . 0 dB is the standard level.

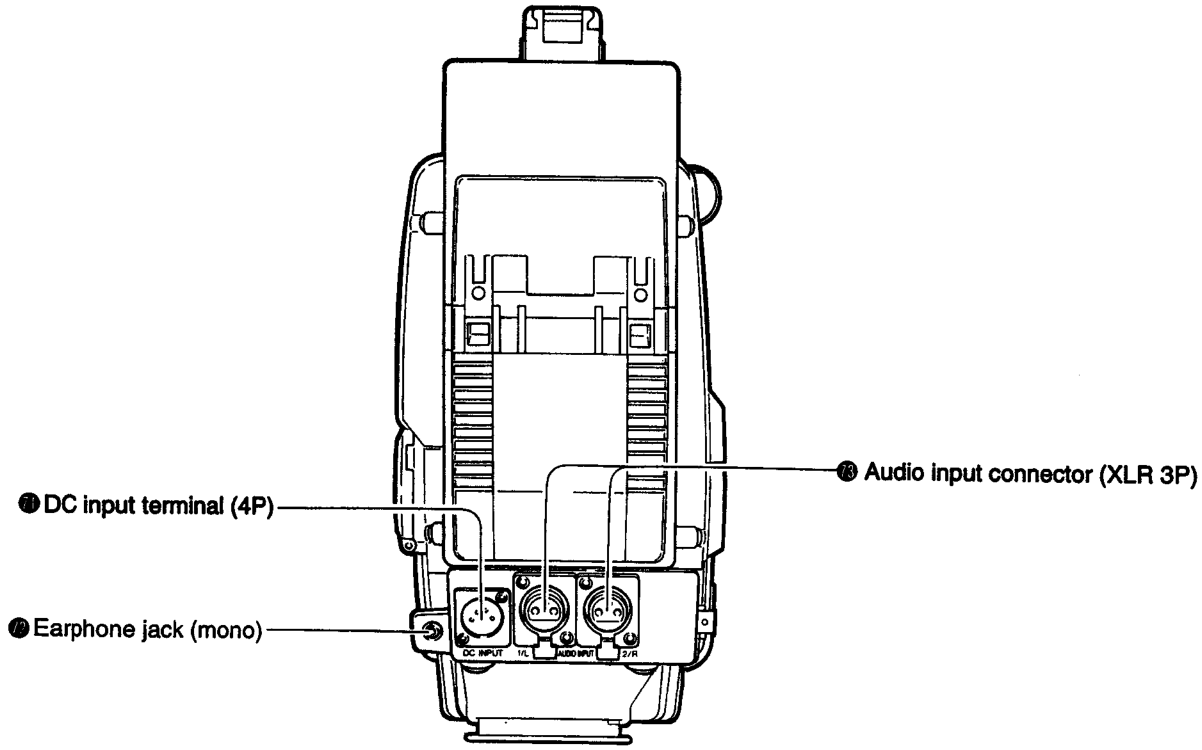
(67) **[BATT] Battery capacity indicator**
Displays remaining battery time in 5 steps. With a fully charged battery, all blocks are displayed. When the number of blocks drops to about 2, the OPERATE lamp ㊿ and tally lamp ㉚ (while shooting) start blinking. Replace the battery.
See "Warning" on page 23.

(68) **[S-VHS] S-VHS indicator**
Appears when recording or playback in the S-VHS mode is engaged.

(69) **[VITC] VITC indicator**
Appears in VITC recording. (With the optional time code generator SA-R200)

(70) **[LTC] LTC indicator**
Appears in LTC recording. (With the optional time code generator SA-R200)

INPUT AND OUTPUT VIDEO AUDIO POWER


(73) Audio input connector (XLR 3P)
(71) DC input terminal (4P)
(72) Earphone jack (mono)
DC INPUT
1/L
AUDIO INPUT
2/R

(71) [DC INPUT] DC input terminal (4P)
Apply 12 V DC from an AC power adapter.

Pin No.	Function
1	GND
2	—
3	—
4	+12 V DC

(72) [EARPHONE] Earphone jack (mono)
Insert an earphone with ø 3.5 mm plug to monitor the sound. Sound output from the monitor speaker is defeated.

(73) [AUDIO INPUT 1/L, 2/R] Audio input connectors
Audio input connectors for channel-1 (L) and channel-2 (R). Input level can be selected from –60 dBs and +4 dBs with audio input select switch.

Pin No.	Function
1	GND (Shielded)
2	HOT
3	COLD

(74) [AUDIO OUT 1/L, 2/R] Audio output connectors (RCA)
Outputs Hi-Fi or normal audio channel-1 (L) and channel-2 (R) as selected with the audio output select switch ㊱ .

(75) [Y/C OUT] Y/C video output connector (7-pin)
Outputs the S-VHS Y/C video signal selected with the video output select switch (77) .

Pin No.	Function	Pin No.	Function
1	Y signal	5	C signal
2	GND (Y)	6	GND (C)
3	—	7	—
4	—		

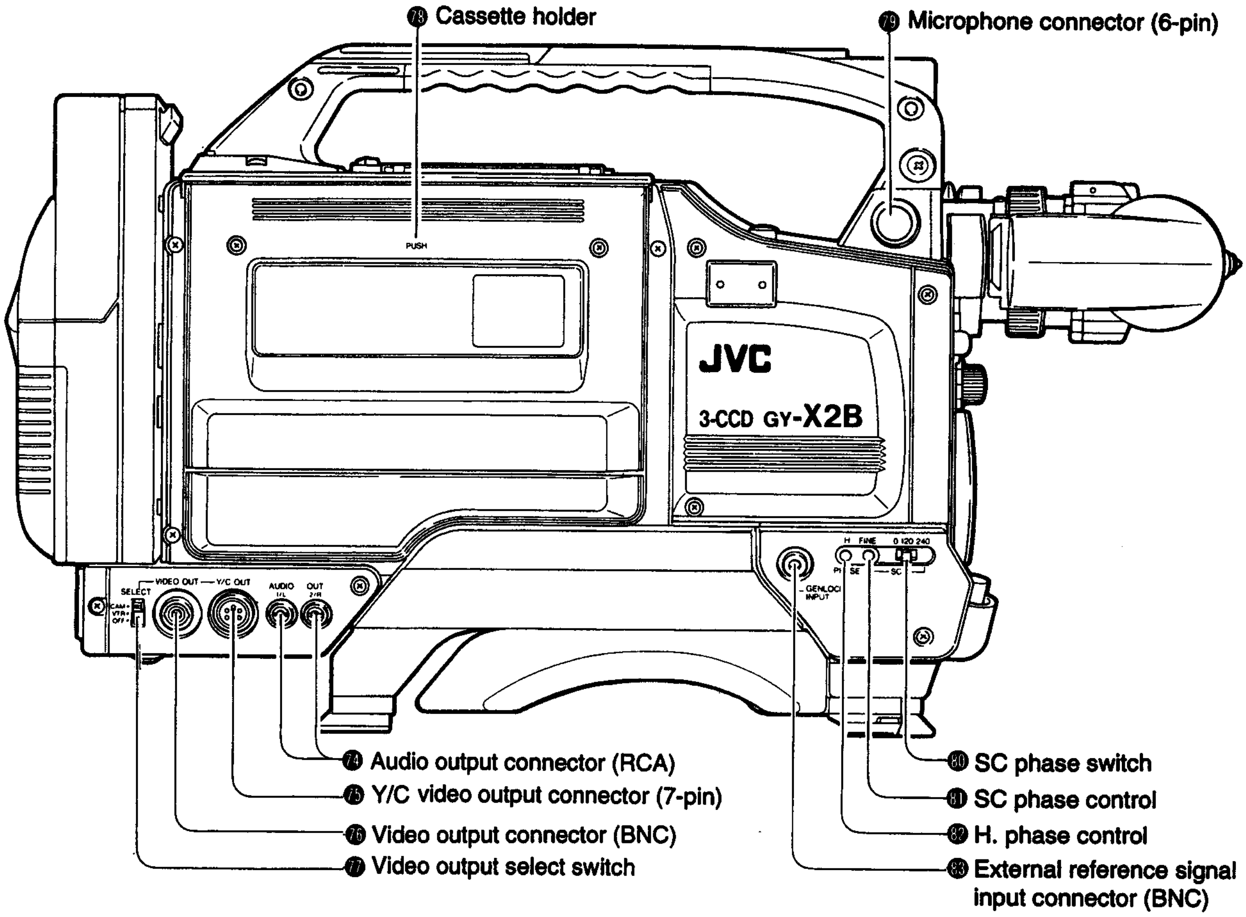
(76) [VIDEO OUT] Video output connector (BNC)
Outputs the composite video signal selected with the video output select switch ((77)).

(77) [SELECT] Video output select switch
Selects the video signal to be output from the Y/C (75) and composite (76) video signal output connectors.

CAM : Camera-through signal is output regardless of the VTR's operation mode.

VTR : When the VTR is in the Play mode, the playback signal is output. In other modes, camera-through signal is output.

OFF : Video signal output from either connector is not available. To save power, set to this position when signal is not necessary.


(78) Cassette holder
(79) Microphone connector (6-pin)
PUSH
JVC
3-CCD GY-X2B
SELECT
CAM
VTR
OFF
VIDEO OUT
Y/C OUT
AUDIO
OUT
H
FINE
0 120 240
PH
SE
SC
GENLOCK INPUT
(74) Audio output connector (RCA)
(75) Y/C video output connector (7-pin)
(76) Video output connector (BNC)
(77) Video output select switch
(80) SC phase switch
(81) SC phase control
(82) H. phase control
(83) External reference signal input connector (BNC)

(78) **Cassette holder**
Accepts either an S-VHS or VHS cassette.

(79) **[MIC] Microphone connector (6-pin)**
Connect the provided microphone.
With the KA-A30 microphone holder (optional), the following microphone models can be used.

- M-K50 (mono; VC-P740 optional cable required)
- MV-P602 (stereo; VC-P740 optional cable required)
- MV-P612 (stereo)

Pin No.	Function
A	R (Hot)
B	+9 V DC
C	GND
D	L (Hot)
E	L (Cold)
F	R (Cold)

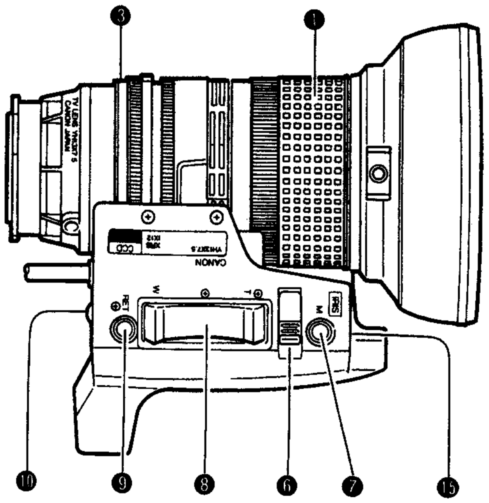
(80) **[SC 0° 120° 240°] SC phase switch**
Adjusts the color subcarrier phase of this unit in three steps (0°, 120°, and 240°) with respect to the reference sync signal input to connector (83) in genlock operation.

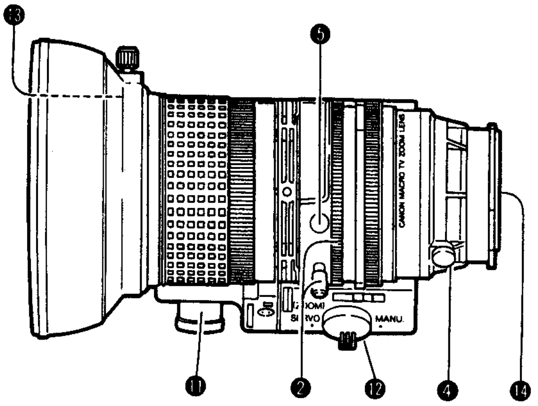
(81) **[SC FINE] SC phase control**
Fine-adjusts the color subcarrier phase of this unit with respect to the reference sync signal input to connector (83) in genlock operation.

(82) **[H PHASE] H. phase control**
Adjusts the horizontal sync phase of this unit with respect to the reference sync signal input to connector (83) in genlock operation.

(83) **[GENLOCK INPUT] External reference signal input connector (BNC)**
Apply a composite video signal or black burst for genlock operation.

LENS YH13X7.5K12 (optional)





❶ **FOCUS ring**
Manual focus ring. Focus distance indicated.

❷ **ZOOM lever/ring**
Manual zoom ring with lever.
Deactivate servo zoom with switch ⓬.
Lens zoom length is indicated.

❸ **IRIS ring**
Manual iris ring.
Deactivate auto iris with switch ❻.

❹ **BACK FOCUS ring**
For set-up back focus adjustment only.
Secure with the screw knob.

❺ **MACRO button (for closeups)**
Turning the zoom ring counterclockwise (as seen from the front of the lens) while keeping this button (M) pressed, allows closeup shooting at up to 5 cm from the lens. The Normal Focus ring should be left set at infinity. In the Macro mode, focusing must be manually adjusted by the zoom ring; regular focus adjustment and zooming are not possible.

❻ **IRIS MODE switch**
A : Auto iris On and Remote operation
M : Manual iris operation

❼ **MOMENTARY AUTO IRIS**
In manual iris mode (M), pushing this button activates the auto iris function while it is held down only.

❽ **ZOOM SERVO control**
Pushing this lever in the W direction makes the lens move wider.
Pushing this lever in the T direction makes the lens move tighter.
Pushing harder changes the speed of the zoom. Turn this lever on with switch ⓬.

❾ **RETURN (RET) switch**

- Pressing this button in the Record-Pause mode activates Auto Review. The tape rewinds for a few seconds, then automatically plays back the rewound portion and re-enters the Record-Pause mode at the same point. Useful for checking the tape section just recorded.
  This function work only one time after become "REC-Pause" mode to keep tape position accuracy.
- This switch has no effect during record mode.

❿ **VTR trigger**
To start shooting push once.
To stop shooting push again.

⓫ **REMOTE ZOOM control connector**
For use with Studio or Teleconferencing remote control units.

⓬ **ZOOM MODE knob**
SERVO : Servo zoom on
MANU : Manual zoom mode

⓭ **FILTER mount screw**
Mount a transparent or UV filter for lens protection by screwing this screw into the lens hood's inner groove, or the front of the lens.
Special-effect filters can also be used.
Filter diameter:
- Lens hood inside : 82 mm, 0.75 mm pitch
- Lens front : 72 mm, 0.75 mm pitch

⓮ **Rear lens surface**
Protect with special cover.

1.5-INCH VIEWFINDER

❶ **Slide lock**
This stopper screw prevents the viewfinder from coming off the camera.

❷ **Viewfinder shoe**
Attaches to the viewfinder post on camera.

❸ **Viewfinder cable**
Connect to camera socket ⓫

❹ **CONTRAST**
Controls the level of viewfinder contrast.

❺ **BRIGHT**
Controls the level of viewfinder brightness.

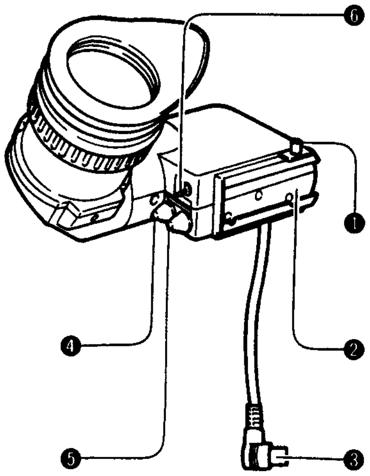
❻ **TALLY switch**
Set this switch to off if you do not want to inform the subjects by the Tally light that they are being recorded.

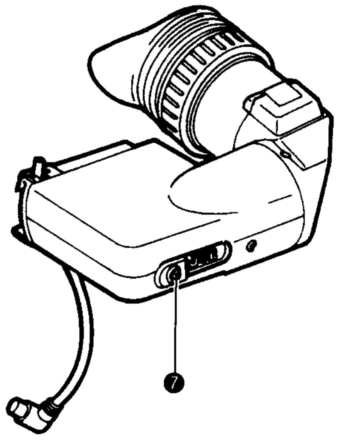
❼ **Tally light**
Lights when recording is in progress.

❽ **Eyepiece**
Blocks light from viewfinder screen and holds eye optics.
The eyepiece can be opened to view the screen directly.
The eyepiece can be rotated up and down for the best shooting position, or opened to view the screen directly.

❾ **Eyepiece focusing ring**
Loosen this ring and move the eyepiece backward and forward to focus the viewfinder for the operators vision.

❿ **Viewfinder slide locking ring**
This ring on the camera viewfinder post can be loosened to move the viewfinder to the left or right for the best operator comfort.
Warning: Avoid over-heating if a light is mounted on the camera handle accessory shoe !



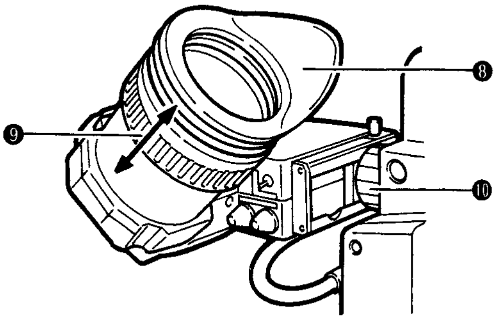


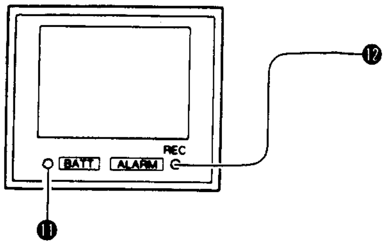
Viewfinder warning indications

- **Viewfinder Warning Lights**

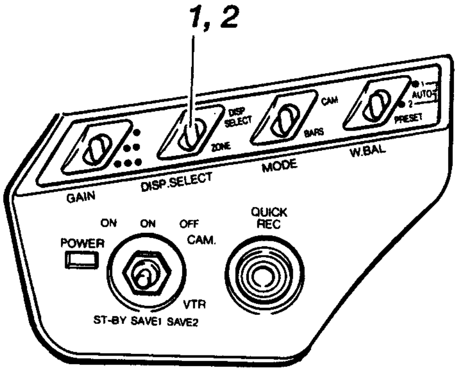
⓫ **BATTERY light**
This lights red when battery voltage becomes too low for the camera to operate.

⓬ **REC/ALARM light**
This light shines for these conditions.
Solid Green : ● While recording
Blinks Green : ● While the VTR prerolls before recording
● If the tape is finishing.
● If the VTR malfunctions.





VIEWFINDER STATUS DISPLAY


1, 2
GAIN
DISP SELECT
ZONE
DISP.SELECT
CAM
BARS
MODE
AUTO 1
2
PRESET
W.BAL
ON
ON
OFF
POWER
CAM.
QUICK REC
VTR
ST-BY SAVE1 SAVE2

This function indicates camera and VTR status on the viewfinder screen. Three display modes are available: Mode-0, Mode-1 and Mode-2. Mode-0 is engaged when the power is turned on.

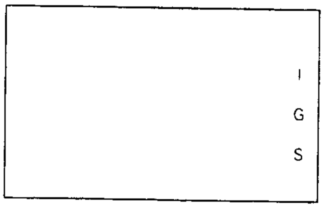
To select the mode:

1. Push the DISP. SELECT switch up. Each time the switch is pushed, the mode changes in the following sequence.

→ Mode-0 → Mode-1 → Mode-2 →

During tape playback the status display cannot be used.

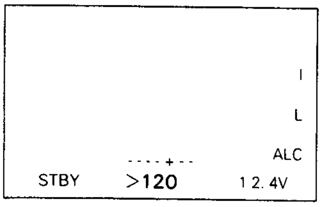
Display Mode-0



Mode-0 :
Indicates the selected functions listed below.

Indication	Selected function
I	IRIS switch set to OVER or UNDER
G or L	G : GAIN (+9, +18) L : LOLUX
S or ALC	S : SHUTTER switch set to ON or V-SCAN ALC: Auto level control

Display Mode-1


I
L
ALC
- - - - + - -
STBY
>120
1 2. 4V

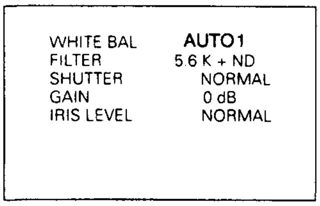
Mode-1 :
Push the DISP. SELECT switch once.

VTR mode : SAVE, ST-BY, REC, QREC, STOP
Remaining tape time : >120, >90, >60, >30, >20, >10, >5, >4, >3, >2, >1, >0
Input DC voltage : Power voltage with a decimal point
Audio level : 7 steps

–	–	–	–	+	–	–
(–18dB)	(–12dB)	(–6dB)	(–3dB)	(0dB)	(+3dB)	(+6dB)

Mode-0 indications are displayed in Mode-1.

Display Mode-2


WHITE BAL AUTO1
FILTER 5.6 K + ND
SHUTTER NORMAL
GAIN 0 dB
IRIS LEVEL NORMAL

Mode-2 :
Push the DISP. SELECT switch twice.

WHITE BAL : AUTO 1, AUTO 2, PRESET, FAW*
FILTER : 3.2K, 5.6K, 5.6K+ND
SHUTTER : NORMAL, 1/100, 1/250, 1/500, 1/1000, 1/2000
EEI*, Variable scan speed: 1/60.1 – 1/2034.6
GAIN : 0 dB, 9 dB, 18 dB, LOLUX, ALC*
IRIS LEVEL : OVER, NORMAL, UNDER

* In Quick Record mode
FAW = Full time auto white balance
EEI = Extended Electronic Iris (Variable shutter)
ALC = Automatic level control

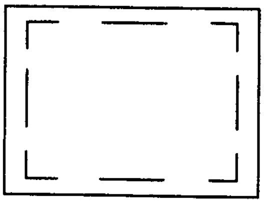
VIEWFINDER AUTOMATIC DISPLAY

Safety zone indication:

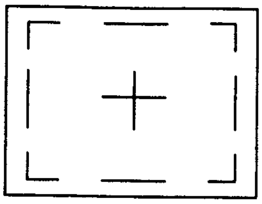
2. Push the DISP. SELECT switch down to "ZONE".
Each time the button is pushed down, the mode changes in the following sequence.

→ No indication → ZONE 1 → ZONE 2 → ZONE 3 ↩

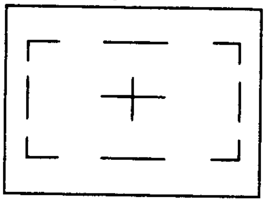
Safety Zone 1



Safety Zone 2



Safety Zone 3



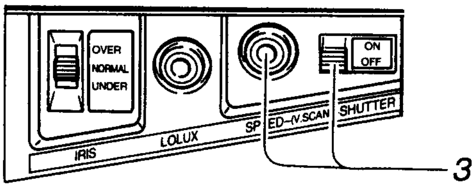
(16 : 9)

Shutter speed indication:

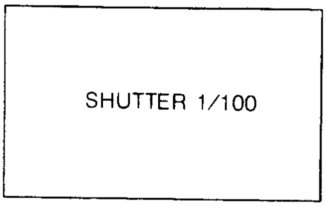
3. With the shutter switch set to ON, press the speed button.

→ 1/100 → 1/250 → 1/500 → 1/1000 → 1/2000 ↩

- When the shutter switch is set to OFF, the display will be: SHUTTER NORMAL.
- Variable scan shutter speeds are also displayed.

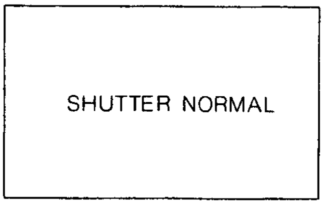


SHUTTER switch ON



SHUTTER 1/100

SHUTTER switch OFF



SHUTTER NORMAL

Auto white operation mode indication:

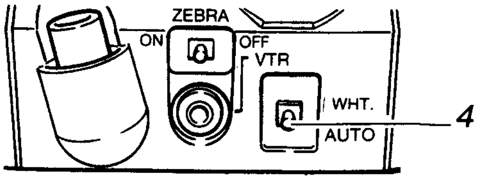
4. Set the Auto white balance start switch to WHT. The following indication will appear for about 2 seconds.

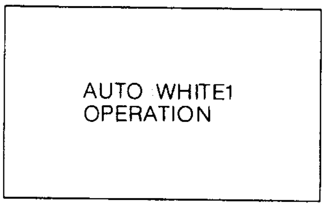
With AUTO WHITE 1 :

AUTO WHITE 1
OPERATION → AUTO WHITE 1
COMPLETED

With AUTO WHITE 2 :

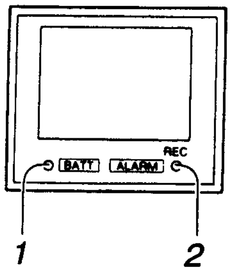
AUTO WHITE 2
OPERATION → AUTO WHITE 2
COMPLETED





AUTO WHITE1
OPERATION

VIEWFINDER WARNING MESSAGES



■ VIEWFINDER WARNING LIGHTS

***1.* BATTERY light**
This lights red when battery voltage becomes too low for the camera to operate.

***2.* REC/ALARM light**
This light shines for these conditions.

Solid Green:	● While recording
Blinks Green:	● While the VTR prerolls before recording ● If the tape is finishing. ● If the VTR malfunctions.

Automatic warnings:

LOW BATTERY	: This blinks when the VTR or Camera battery level falls too low.
TAPE NEAR END	: There are less than 3 minutes tape remaining.
TAPE END	: The tape has run out.

■ FUNCTION FAILURES

VTR trigger

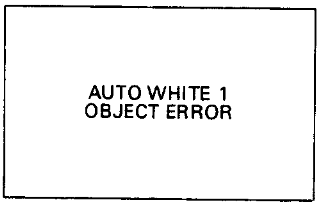
VTR OP MISS?

VTR WARNING	: The VTR is not operating due to Condensation on the video heads, Servo failure, or other malfunctions.
VTR OP MISS?	: VTR operation missed.

- The Camera/VTR switch may be in SAVE 1. The Save function stops head rotation and turns off the power to the circuitry.

White balance function

White balance



AUTO WHITE 1
OBJECT ERROR

AUTO WHITE 1, 2 OBJECT ERROR	: Check whether the object being shot is white enough. Check for proper filter.
AUTO WHITE 1, 2 LOW LIGHT ERROR	: Check to see if increasing gain or lighting will help.
AUTO WHITE 1, 2 OVER LIGHT ERROR	: Check to see if the sun or other bright light is shining in the lens. Check that the filter is adjusted properly.

VTR WARNING FUNCTIONS

The VTR section of this camcorder features a comprehensive warning system which warns the operator of various malfunctions, if any, during shooting/recording by means of viewfinder and display panel messages, visual indications via LED or tally lamp, and alarm sounds via the earphone or monitor speaker.
The following chart summarizes the operation of the warning system.

■ SYMPTOMS

VTR Display Panel Warning	Symptom	Operation
SERVO LOCK	Head, drum and capstan are not locked while recording. No video signal input. (Appears when recording only.)	Operation continues.
AUTO OFF	Abnormal rotation of the drum, capstan, reel. Abnormal mechanical position.	Operation will stop after about 10 seconds.
DEW	Moisture condensation occurs.	Stops. No operations except cassette ejection are possible.
TAPE END	About 3 minutes before tape end. (Appears when recording only.)	Operation continues.
	Tape ends completely.	Stops.
BATT	Battery duration warning.	Operation continues.
	Battery capacity insufficient.	Enters the Record-Pause mode, then turned off.

■ WARNING INDICATIONS

Warning	VTR			Monitor Sound	Viewfinder		
	OPERATE LED	REC Tally	VTR Display Panel		Warning Lights		On Screen Display
					REC Tally	BATT Tally	
SERVO LOCK	✇	✇	"SERVO LOCK"	‒▥▥▥▥‒	◑	—	VTR WARNING (SERVO)
AUTO OFF	✇	—	"AUTO OFF"	▥▥▥▥▥▥	◑	—	VTR WARNING (HARD)
DEW	●	—	"DEW"	‒▥▥▥▥‒	◑	—	VTR WARNING (DEW)
TAPE END	◑	◑	—	‒‒▥‒‒	◑	—	TAPE NEAR END
	●	—	—	▥▥▥▥▥▥ (REC, STOP)	◑	—	TAPE END
BATT	◑	◑ (REC)	Note E BATT F ■■□□	Note ‒‒▥‒‒ (REC, STOP)	—	Note ◑	Note LOW BATTERY
	●	—	Note E BATT F □□□□	Note ▥▥▥▥▥▥	—	Note ◑	Note LOW BATTERY

- The OPERATE LED usually remains lit green to show operation on. In case of warning, it changes to red. Operation is as above.
- The alarm sound is output together with regular monitor sound via monitor speaker or earphone.
- Indication symbols:
- Note: When it is "SAVE1" mode, only these function works.

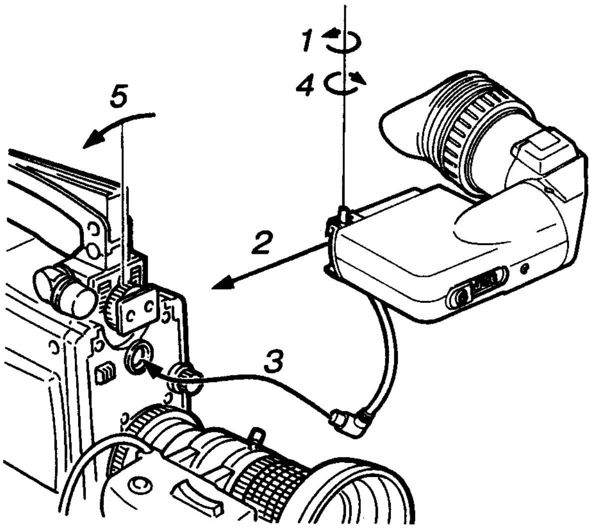
● : Lights ◑ : Blinks once per second ✇ : Blinks 4 times per second

▥▥▥▥▥▥ : Continuous sound ‒‒▥‒‒ : Long beeps once per second ‒▥▥▥▥‒ : Short beeps 4 times per second

PREPARATIONS

Service Information:
The VF-P550 viewfinder cannot be attached to the GY-X2B for the reason of the power capacity.
When you want to use a 5" viewfinder for the GY-X2B, make sure to attach it the VF-P550B viewfinder.

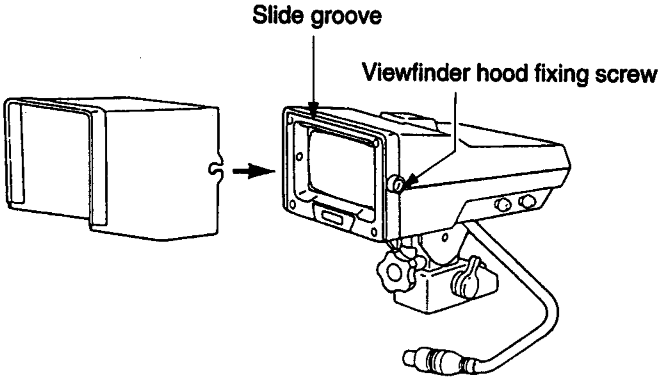
ATTACHING THE 1.5-INCH VIEWFINDER

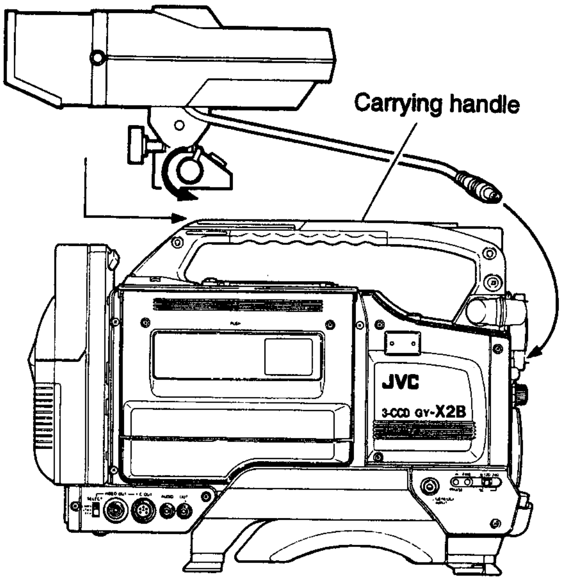


1. Loosen the stopper screw.
2. Attach the viewfinder with its guide aligned with the shoe.
3. Connect the cable.
4. Tighten the stopper screw.
5. Tighten the ring.

ATTACHING THE STUDIO VIEWFINDER VF-P400 (optional)

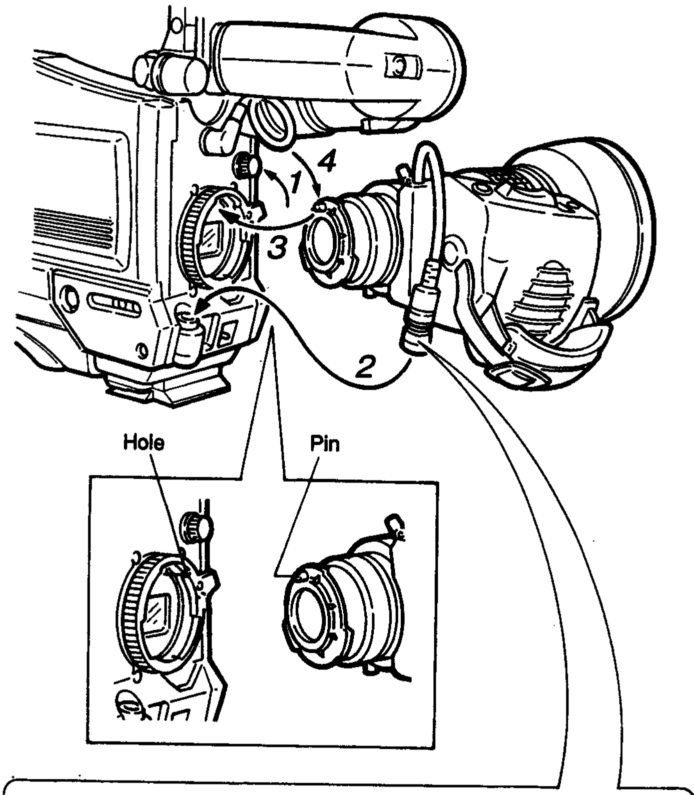
Attach the viewfinder to the slide bracket of the carrying handle.
For details, refer to the VF-P400's instructions.


Slide groove
Viewfinder hood fixing screw


Carrying handle
JVC
3-CCD GY-X2B

ATTACHING THE YH13X7.5K12 ZOOM LENS (optional)

1. Loosen the mount ring.
2. Connect the cable.
3. Attach the lens with its pin aligned with the hole in the mount.
4. Tighten the mount ring.

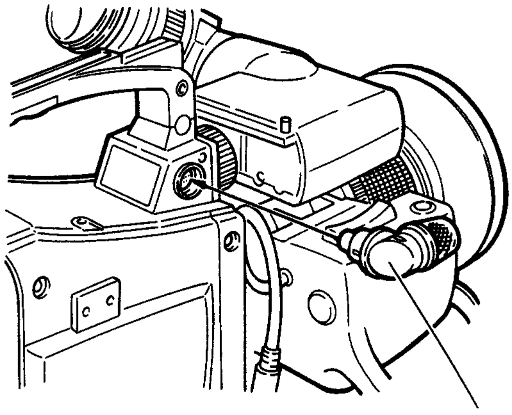


When unplugging the cable, grasp this portion and pull up.
If you have any difficulty, it may be better to remove the lens itself first. In this case, be careful not to drop the lens.

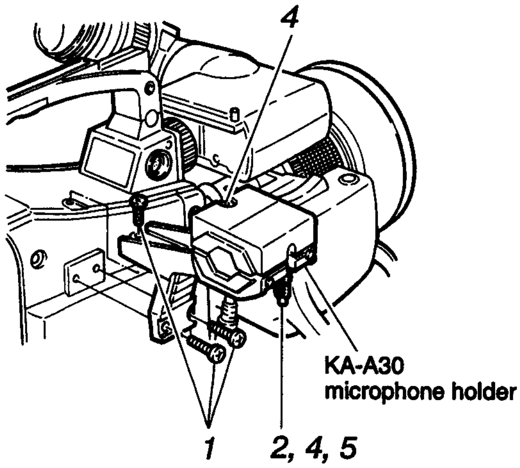
MICROPHONE ATTACHMENT

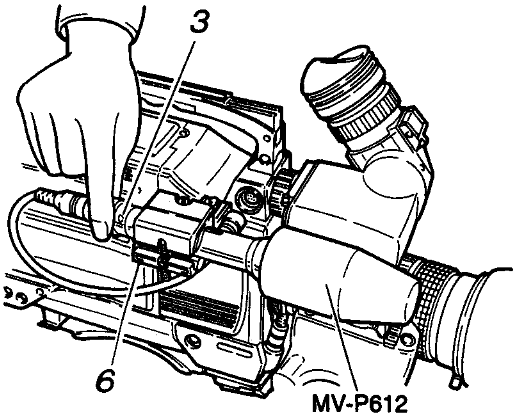
Connecting the provided microphone

Connect the provided microphone to the microphone connector (6-pin).



ATTACHING THE MV-P612/MV-P602/M-K50 OPTIONAL MICROPHONE

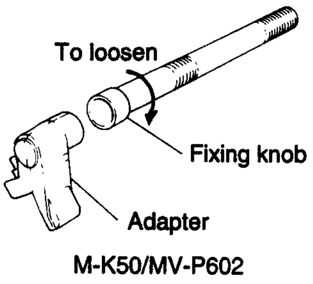




With the optional KA-A30 microphone holder, the optional MV-P612 (stereo), MV-P602 (stereo) and M-K50 (mono) microphones can be used.

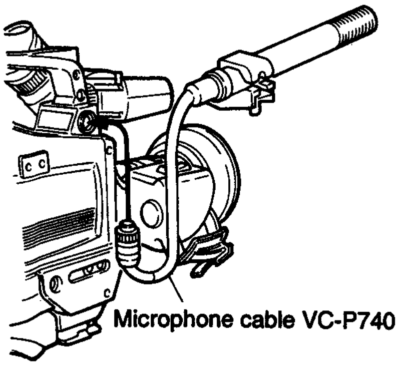
1. Secure the microphone holder with 3 screws.
2. Turn the external fixing knob to loosen the quick release hook. Pull the knob to open the holder.
3. Attach the microphone to the microphone holder so that the microphone does not interfere with the cassette holder. With a stereo microphone, make sure that the left/right-sides are correct.
4. Turn both the external and internal fixing knobs to secure the microphone.
5. Close the holder.
6. Secure the microphone cable with the KA-A30's cable clamp.

- **JVC MV-P612 microphone (optional)**
  To connect the JVC MV-P612, use the 6-pin connector.



- **JVC M-K50/MV-P602 microphones (optional)**
  To connect these models, first remove the microphone from the adapter and connect the optional VC-P740 microphone cable instead. Use the 6-pin connector.
  (Fig. shows the example using the M-K50.)

- **Other microphones**
  When using microphone models other than the above, connect to the XLR 3-pin audio input connector located below the battery holder.



• Service Information:
Battery capacity

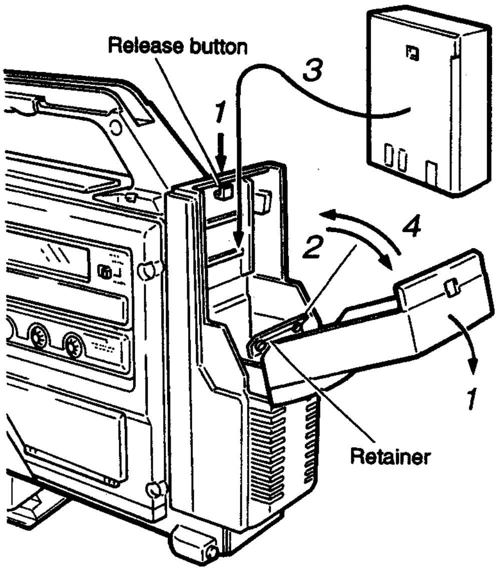
NB-G1 (JVC)	:	2.2 Ah, 12 V
NP-1B (Sony)	:	2.3 Ah, 12 V
NP-1A (Sony)	:	1.7 Ah, 12 V

POWER SUPPLY

NB-G1 (JVC) or Flat shape type BATTERY PACK

To install the battery pack

1. Open the cover while pressing the buttons.
2. Swing out the battery retainer.
   (For Flat shape type, leave the retainer in place.)
3. Install the battery pack with its terminals facing the camera.
   (The illustration shows an NB-G1 battery pack.)
4. Replace the battery retainer and close the cover.



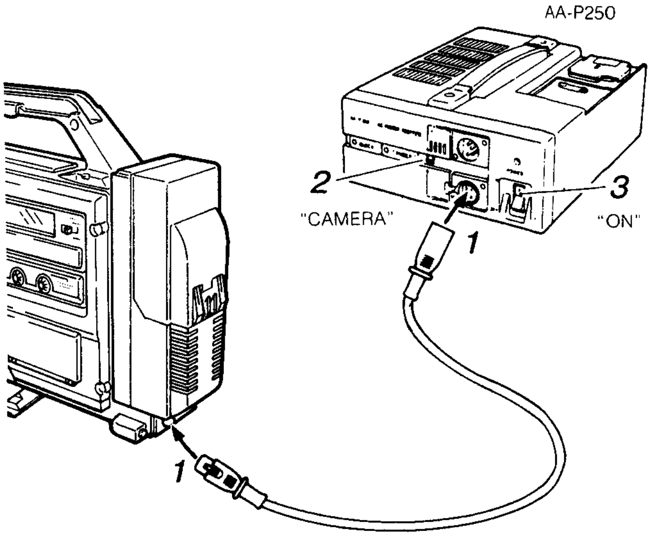
Operating time
A fully charged battery pack offers the following continuous operating time at 25°C:
NB-G1 : Approx. 40 minutes
The operating time may be shorter than this depending on the battery storage condition and ambient temperature.

- Before recording, charge the battery pack. It is recommended that several charged battery packs are kept at hand as spares.
- To charge the battery pack, use an optional AC power adapter. For the charging procedure refer to the instruction manual of the optional AC power adapter.
- The battery condition can be checked on the viewfinder screen. (See page 20.)
- When the battery pack is becoming low, a warning indicator appears. (See page 23.) When this indicator is seen, replace the battery pack with a charged one.
- Do not leave the battery pack in a place subject to high temperatures, as this could damage it and make it unusable.

AA-P250 AC POWER ADAPTER

1. Connect the camera head to the AC power adapter using the cable provided with the AC power adapter.
2. Set the switch to CAMERA.
3. Set the POWER switch of the AC power adapter to ON.

Do not use power units other than specified, otherwise the recorder may stop due to a temporary drop in power because of the operation of the protective circuit.



TRIPOD MOUNTING

The KA-510 Tripod Base included with the camera must be used to secure the camera to a tripod or camera stand.

1. **Tripod mounting holes**
   Match a 3/8 or 1/4 inch tripod mounting screw to the best hole for good balance.

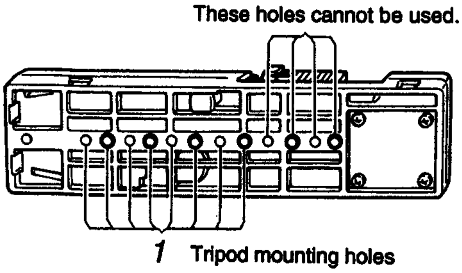
2. **Tripod mount release**
   Pull back once to activate the front clip before mounting the camera.

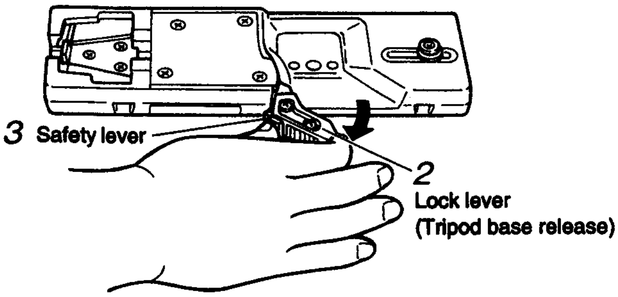
3. **Safety lever**
   Prevents accidental release. If the camera is secured in the Base, this release lever must be pushed in order to pull the release lever and open the Base.

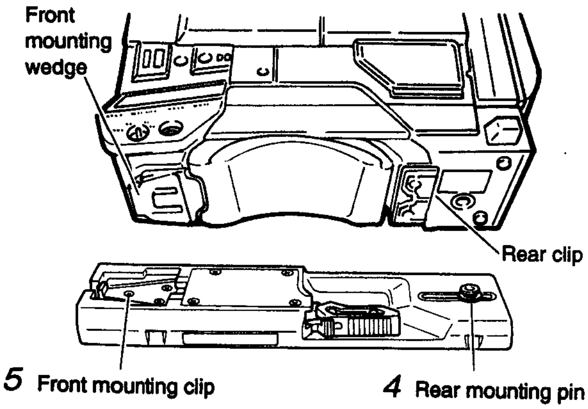
4. **Rear mounting pin**
   Make sure the rear mounting clip of the camera is firmly on the Tripod Base, so that the rear mounting pin can be engaged properly.

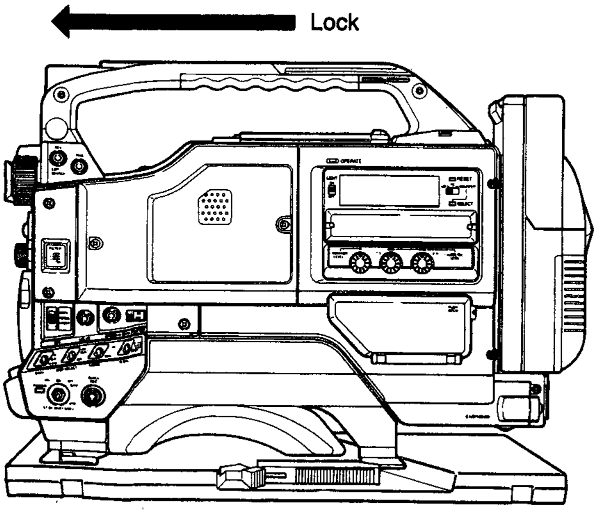
5. **Front mounting clip**
   Making sure the rear mounting pin engages, slide the front mounting wedge on the camera into the front mounting clip of the base until it engages automatically with a clik.
   The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.

6. **Mounting error**
   Double check that the rear pin is engaged properly.
   The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.


These holes cannot be used.
1 Tripod mounting holes


3 Safety lever
2
Lock lever
(Tripod base release)


Front mounting wedge
Rear clip
5 Front mounting clip
4 Rear mounting pin



LOADING, EJECTING

1. Set the POWER switch to "ST-BY".

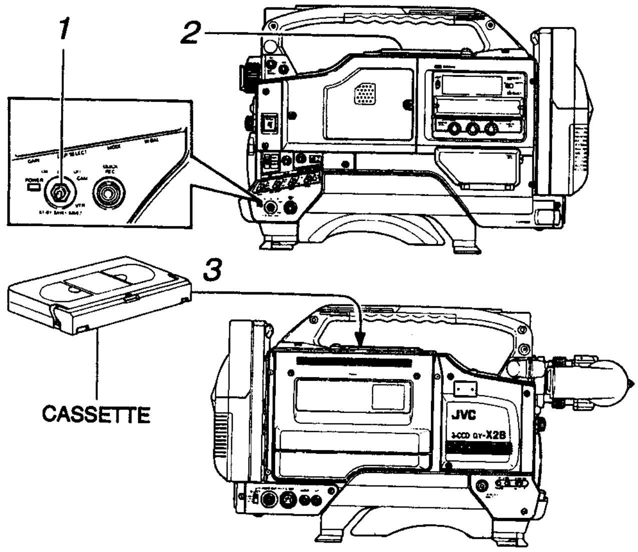
2. Press the EJECT button to open the cassette holder. The eject indicator blinks.

3. Insert a cassette. Make certain before loading the cassette that the tape is not slack. Close the cassette holder slowly. When ejecting a cassette, first engage the Stop or Record-Pause mode, then press the EJECT button. It takes approximately 10 seconds to eject in the Record-Pause mode because the process starts from the fully-loaded tape position.

Ejection is not possible when the power is off.

Note: Do not use S-VHS or VHS cassettes longer than 160 minutes to avoid tape damage.

Note
Because tape may be damaged while search mode, do not use C-Cassette adaptor.


1
2
3
CASSETTE
JVC
3-CCD GY-X2B

ADJUSTMENTS BEFORE SHOOTING

CAMERA CONTROL SETTINGS FOR ADJUSTMENT

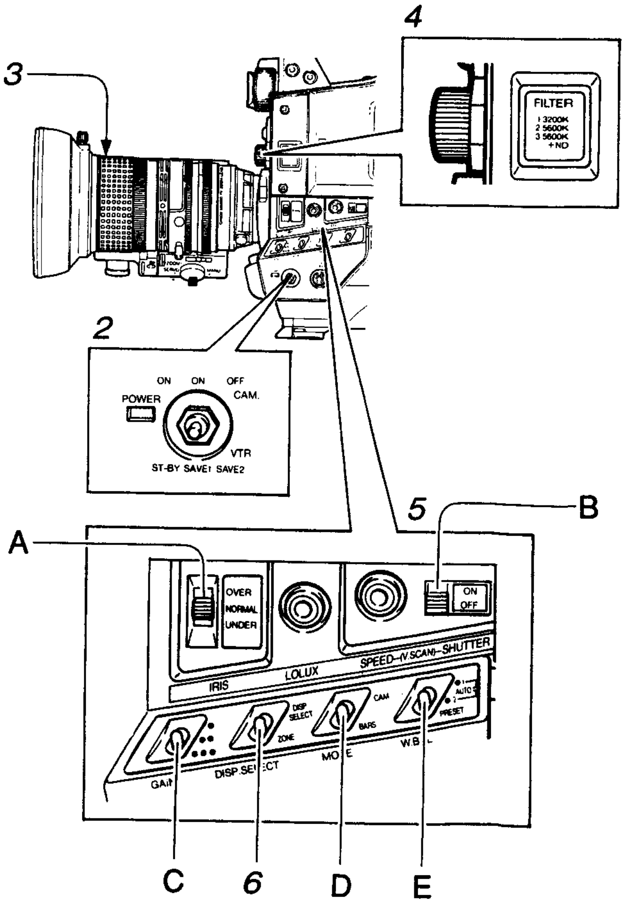
1. POWER ON
1. First place a charged battery in the battery holder or connect DC power to the DC input.
2. Turn the AC power adapter on.

2. SAVE/ON
Turn the POWER switch to the SAVE 1/ON middle position.

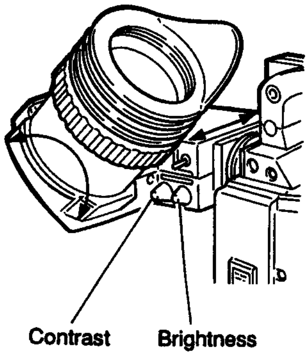
3. AUTO IRIS ON
Initially set the lens iris to Automatic.
Later take advantage of the Momentary Iris control to activate the camra's exposure system when needed.

4. FILTER turret
Choose the proper Filter Selection for the lighting conditions.

5. Left side SWITCH positions
A. IRIS correct select switch; set to NORMAL.
B. SHUTTER switch; set to OFF position (1/60).
C. GAIN switch; set to 0 dB. The single dot position is always 0 dB.
D. MODE (CAM/BARS) switch; set to CAM.
E. W. BAL (Auto White Balance Memory) switch; set to 1 or 2.

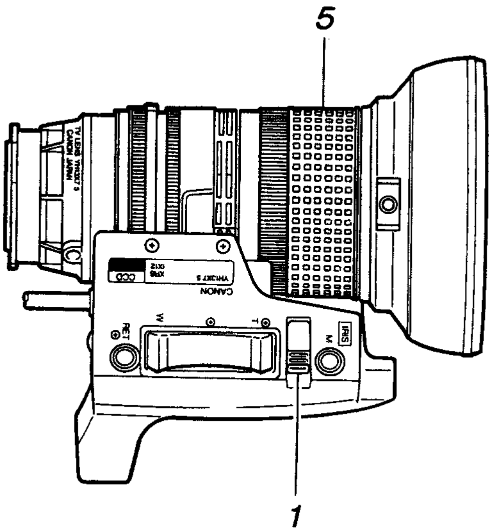

4
FILTER
1 3200K
2 5600K
3 5600K
+ND
3
2
ON ON OFF
POWER
CAM.
VTR
ST-BY SAVE1 SAVE2
5
B
A
OVER
NORMAL
UNDER
ON
OFF
IRIS
LOLUX
SPEED-(V.SCAN)-SHUTTER
DISP SELECT
ZONE
CAM
BARS
AUTO
1
2
PRESET
GAIN
DISP.SELECT
MODE
W.BAL
C
6
D
E

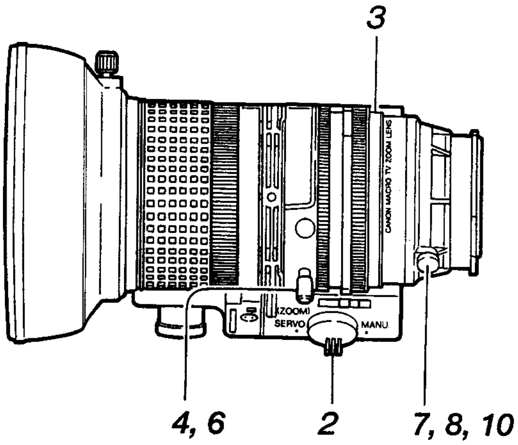
VIEWFINDER ADJUSTMENT



Adjust the viewfinder to the operator's eyesight and shoulder position for the best comfort.
Next adjust the brightness and contrast for the viewing conditions.

BACK FOCUS ADJUSTMENT





It is only necessary to perform this when focusing is not correct in both the Telephoto and Wide-angle positions, such as when the lens is attached for the first time.
Adjust the viewfinder for sharpness first.
It is easier to adjust back focus when the subject is more than 3 meters from the subject.

1. Set the Iris mode to M (Manual).
2. Set the Zoom mode to MANU (Manual).
3. Open the Iris ring to F1.4. If the illumination is too strong, reduce it or move to a darker place.
4. Turn the zoom lever until the lens is completely telephoto.
5. Focus on the subject. There is a specific chart that looks like a dart board which is helpful.
6. Set the lens to completely Wide-angle.
7. Loosen the back focus ring retaining knob.
8. Adjust the back focus ring for the best possible focus.
9. Repeat steps 4 through 8 for fine adjustment.
10. Tighten the back focus ring retaining knob to secure the ring.

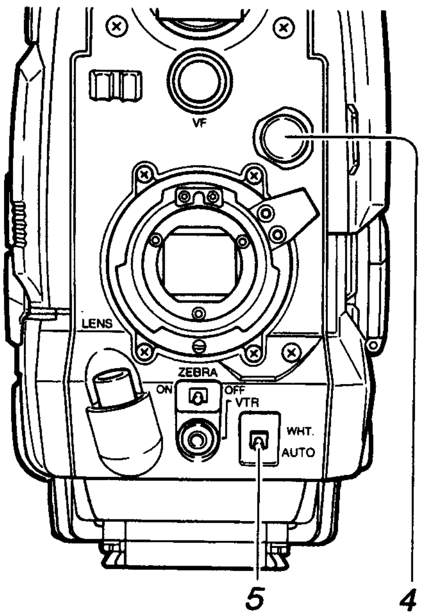
NORMAL AUTO WHITE ADJUSTMENT

Adjust White Balance:

- When the unit is used for the first time each day.
- When the type of light source changes before or during shooting.

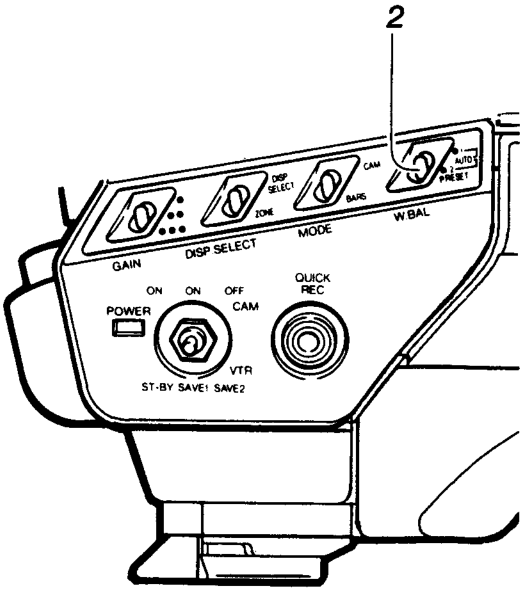
  The last White balance settings are kept in memory even if the camera is turned off.

1. Set the Iris to Automatic (AUTO) or Manual, depending on the subject.
2. Set the white balance mode select switch either to "AUTO 1" or "AUTO 2".
3. Fill the screen with a white object placed in the same position as the subject, and lit by the same primary lighting as the subject.
4. If the FILTER turret has not been set for the current lighting color temperature, do so now. See page 7.
5. Push the switch in the up position momentarily.
6. During the process White Balance "Operation" and "Completed" will show in the viewfinder.


VF
LENS
ZEBRA
ON
OFF
VTR
WHT.
AUTO
5
4

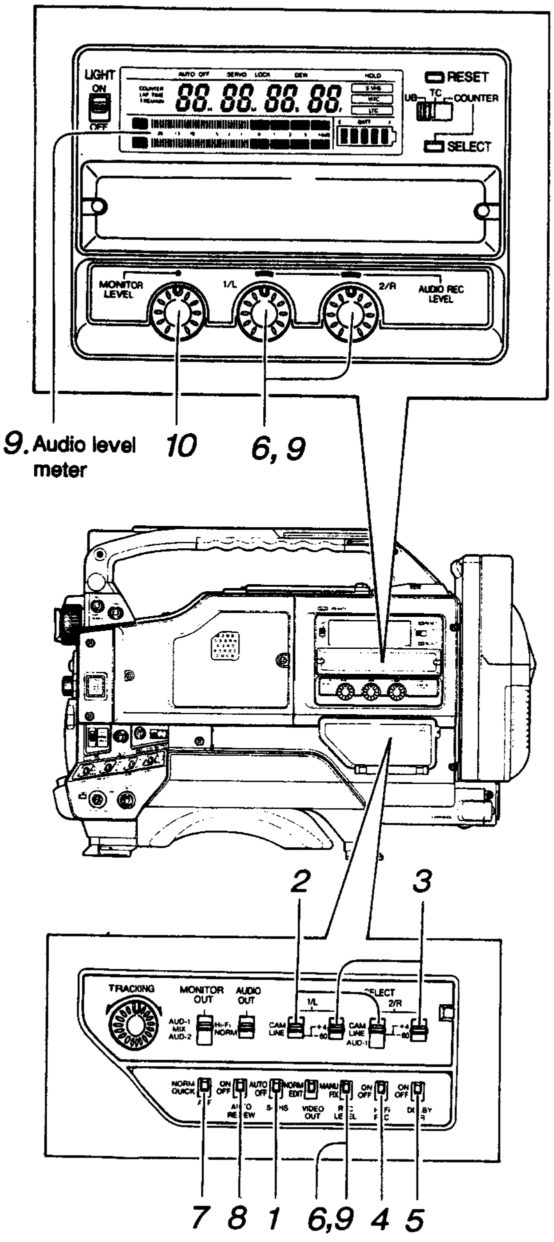
Function Failures:
WHITE BALANCE function

AUTO WHITE 1, 2 OBJECT ERROR	:	Check whether the object being shot is white enough. Check the filter.
AUTO WHITE 1, 2 LOW LIGHT ERROR	:	Check to see if increasing gain or lighting will help.
AUTO WHITE 1, 2 OVER LIGHT ERROR	:	Check to see if the sun or other bright light is shining in the lens. Check that the filter is adjusted properly.


2
GAIN
DISP SELECT
ZONE
DISP SELECT
MODE
CAM
BARS
W.BAL
1
AUTO
2
PRESET
ON
ON
OFF
POWER
CAM
VTR
ST-BY SAVE1 SAVE2
QUICK REC

VTR CONTROL SETTINGS BEFORE SHOOTING

SETTING THE SWITCHES AND AUDIO LEVEL



1. S-VHS mode

Setting the S-VHS/VHS mode switch

1. Open the function box cover by pushing the unlock lever.
2. Set the S-VHS switch as required.
   - S-VHS mode: Set switch to AUTO.
   - VHS mode : Set switch to OFF.

- S-VHS recordings are not possible with VHS cassettes. The VHS mode will be automatically selected.
- VHS mode will record on S-VHS tapes in VHS mode.
- Playback mode is automatic — No switch change.
- S-VHS indicator light
  S-VHS ON : Steady light

2. Audio input

- **Audio input channel-1 (L) select switch**
  CAM : To record the L channel of the microphone input
  LINE : To record the audio channel-1 (L) (XLR 3-pin) input
- **Audio input channel-2 (R) select switch**
  CAM : To record the R channel of the microphone input
  LINE : To record the audio channel-2 (R) (XLR 3-pin) input
  AUD-1 : To record the audio channel-1 (L) input on channel-2 as well. Set to this position when an monaural microphone is used.

3. Audio level adjustment with audio line input

Set the audio channel-1 (L)/channel-2 (R) line input level select switch as follows.

+4 : For +4 dBs line level input
–60 : For –60 dBs microphone level input

4. Hi-Fi/Normal sound

Set the Hi-Fi REC select switch.

ON : To record on the normal audio tracks only
OFF : To record on the Hi-Fi audio tracks only

5. Dolby NR on/off

Set the Dolby NR on/off switch.

ON : For recording/playback with Dolby noise reduction
OFF : Dolby noise reduction off

6. Recording level

Set the recording level select switch.

MANU : Set to this position when adjusting the level manually with the recording level controls.
FIX : To record with standard gain. When the level of signal input is excessive, the limiter is activated to prevent distortion. In this position, the recording level controls are not operate.

7. Assemble recording

Set the AEF select switch.

NORM : AEF is activated for preroll assemble recording with noiseless scene transitions. It takes longer to restart recording from the Record-Pause mode.
QUICK: AEF preroll works partially for quick recording start from the Record-Pause mode. Scene transitions are blurred.

See "Automatic Editing Function" on page 38.

8. Auto Review function

Set the AUTO REVIEW switch.

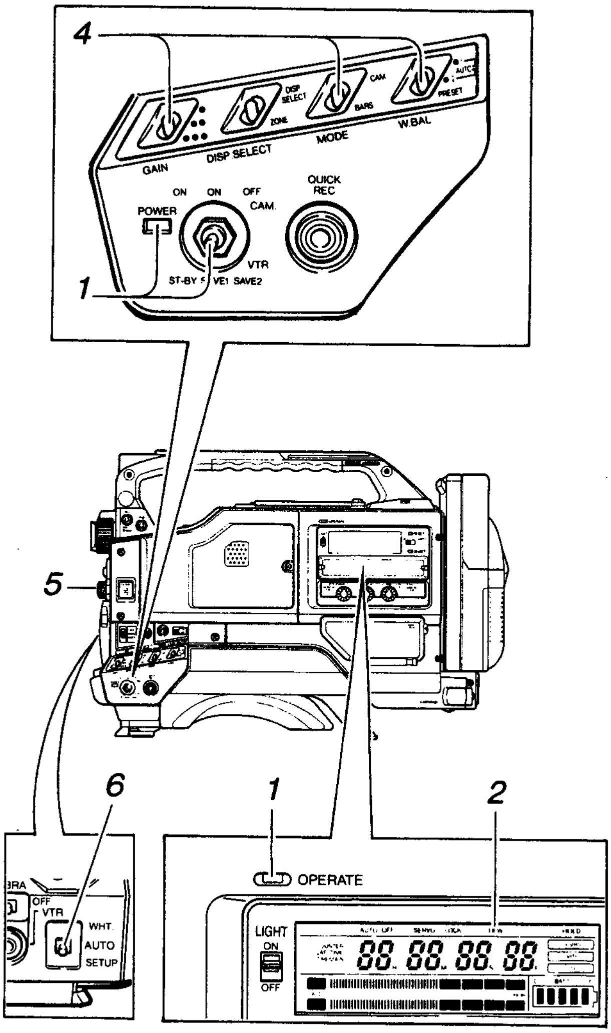
ON : Reverse plays the tape from the Record-Pause mode and plays for approximately 3 seconds, then enters the Record-Pause mode again. For reviewing the last-recorded section.
OFF : This function is not available.

See "Auto Review Function" on page 38.

- Adjusting the audio recording level and monitor level

9. Recording level
With the audio recording level switch set to "MANU", adjust the recording level controls of both the Hi-Fi/normal audio channels 1 (L) and 2 (R) so that the peak level in the audio level meters shows about "0 dB".
When the recording level select switch is set to "FIX", these controls are inoperable.

10. Monitor speaker/earphone level
Adjust the monitor level control to optimize the sound level.
Alarm sound level is fixed and cannot be adjusted by this control.

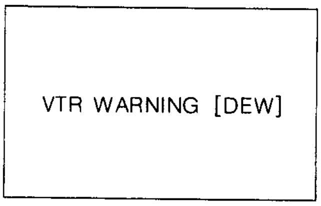

4
GAIN
DISP SELECT
DISP SELECT1
ZONE
MODE
CAM
BARS
W.BAL
AUTO
PRESET
POWER
ON
ON
OFF
CAM.
QUICK REC
VTR
ST-BY
SAVE1
SAVE2
1
5
6
1
2
OFF
VTR
WHT
AUTO
SETUP
OPERATE
LIGHT
ON
OFF

SHOOTING OPERATION

NORMAL SHOOTING

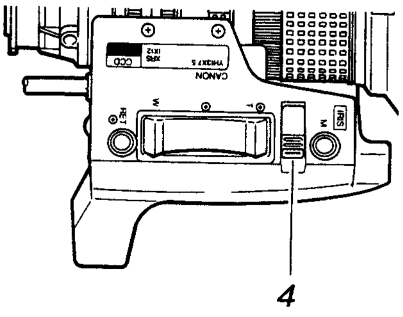
1. First set the POWER switch to VTR SAVE 1, then to VTR ST-BY. The power is turned on and the POWER indicator lights red. The display panel comes on.

2. Make sure that the "DEW" (moisture condensation) warning indication is off. If it is on, wait until it goes off. When moisture condensation occurs, the warning indication appears on the viewfinder screen.



VTR WARNING [DEW]

Viewfinder indication



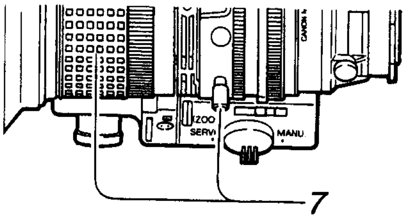
3. Insert a video cassette.
See "Loading, Ejecting" on page 29.

4. Set the switches as required.
"CAM"
"AUTO 1" or "AUTO 2"
Sensitivity suitable for the subject
Set the iris switch of lens to "A".

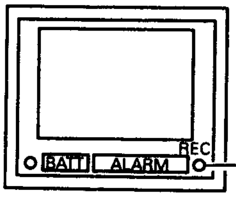
5. Select the filter according to the lighting condition.

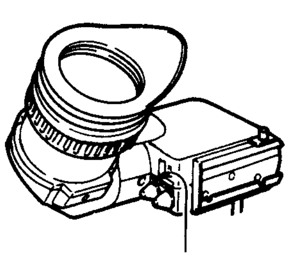
Position 1 (3200K)	: For shooting indoors or outdoors when illumination is not sufficient
Position 2 (5600K)	: For shooting outdoors
Position 3 (5600K + ND)	: For shooting outdoors on a sunny day

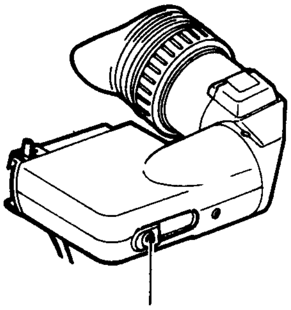
6. Adjust the white balance. (See page 31.)

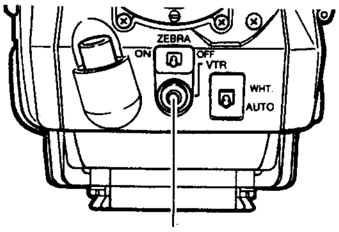

ZOOM
SERVO
MANU
7

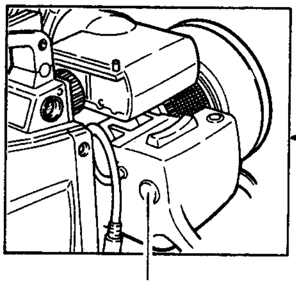
7. Point the camera at the subject and determine the angle of view and focus with the zoom lever and the focusing ring.

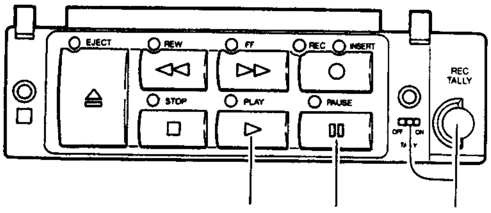












- Service information:
The trigger button on the standard lens for the GY-X2B is a non-lock type. For use of other lenses whose trigger buttons are alternate type (lock type), internal switch setting must be changed.
For detail, refer to "1.6.1 Switches on CP board - ② Lens trigger switching" in page 1-4 of the service manual.

8. Press the recording start/stop trigger on the camera or the PLAY button on the VTR section to start recording.
Once recording has started, the tally lamps on the VTR section and the viewfinder light red, and the REC indication in the viewfinder lights green.

9. To stop recording, press the recording start/stop trigger on the camera again, or the PAUSE button on the VTR section. The unit enters the Record-Pause mode after Quick Review.

Note
- If the STOP button is pressed to stop recording, it takes longer to restore the Record-Pause mode. In this case, set the POWER switch to VTR SAVE 1 once, then set to VTR ST-BY again.

10. When shooting is completely finished, unload the cassette and remove the battery pack or turn the power off.

Notes
- If you switch off the power within one second after the cassette holder is opened, it may not be closed fully. In this case, turn the power on and close the cassette holder. Then turn the power off.
- The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
- The REC/ALARM indicator (green) in the viewfinder blinks until recording actually starts. This is not due to any defect of the unit, but indicates that the VTR is preparing for recording.
- To protect the video heads if the Record-Pause mode is continued for more than about 30 minutes, drum rotation stops and the operation LED starts blinking green. To re-engage the Record-Pause mode from this status, press the REC button on the VTR section or set the POWER switch in the order of VTR ST-BY – VTR SAVE 1 – VTR ST-BY.
- If the VTR trigger button is pushed very quickly and repeatedly, the viewfinder record tally light may blink incorrectly. To clear this condition, turn the camera off, or push the stop button on the VTR.

Power Switch	AUTO SAVE Time	VTR Mode	AUTO EDIT Approximate Time		VTR Condition
			Normal	Quick	
ST-BY	N/A	STOP	15 sec	15 sec	Tape is unloaded.
	< 5 min	Rec-Pause	1.5 sec	0.6 sec	Tape in pause.
	> 5 min	Rec-Pause	2 sec	1 sec	Tape tension is loosened.
	> 10 min	Rec-Pause	3 sec	2 sec	Pinch roller/Capstan off
	> 30 min	Rec-Pause	5 sec	5 sec	Head drum stopped.
SAVE1	N/A	—	15 sec	15 sec	Power on, Head drum stopped, Capstan stopped, Tension off.
SAVE2	N/A	—	NO	NO	Power off, Head drum stopped, Capstan stopped, Tension off.

QUICK RECORDING

The quick-recording function ensures pictures of reasonable quality even when there is no time for camera adjustments and settings.

- Auto iris
- Video ALC
- Full-time audo white balance
- Camera output even when color bar is selected
- Audio recording level is set to the fixed gain (FIX).

Allow 10 seconds or more after the power has been switched on, otherwise the quick-recording function will not operate properly.

- Quick-recording is possible with the operation switch set to either ST-BY or SAVE 1.

• **Service Information:**
If it is wanted to inactivate ALC function in the QUICK REC mode, change of internal switch setting makes it possible.
For detail, refer to "1.7 Switches on CP board - ⑤ QREC ALC switch" in page 1-4 of the service manual.

ITEMS TO BE CHECKED

- For the quick-recording function to work properly, check the following items:
  1. A charged battery must be installed.
  2. There is no condensation on the video heads.
  3. A cassette with its safety tab in place must be loaded.

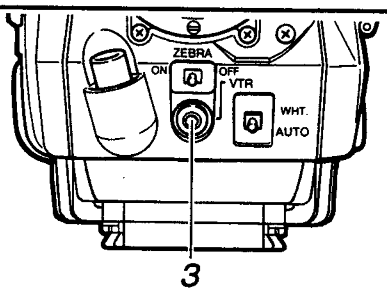
PROCEDURE

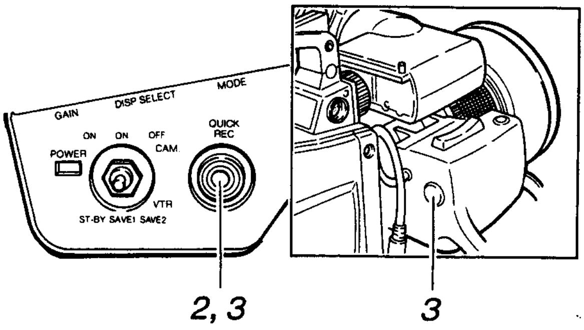
1. Check points 1, 2 and 3 above.
2. Press the QUICK REC trigger.
3. For Record-Pause mode, press one of the following triggers:
   - QUICK REC trigger
   - VTR trigger on the camera
   - VTR trigger on the lens
   - "PAUSE" button on the VTR

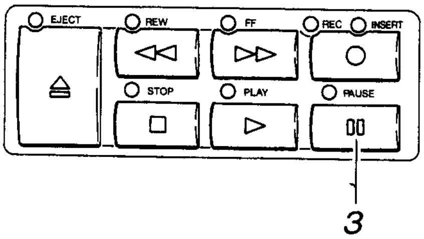
   In Record-Pause mode, the camera resumes the status in which it was before quick recording was initiated.

Note

- If the STOP button on the VTR section has been pressed and "STOP" appears on the viewfinder screen, it takes longer to initiate quick-recording. Return the POWER switch to SAVE1 and set to ST-BY again.
- Do not press the Quick Record trigger quickly and repeatedly. (See note on previous page.)
- If VTR start to "REC" from stop mode, audio level may change at the beginning of recording.







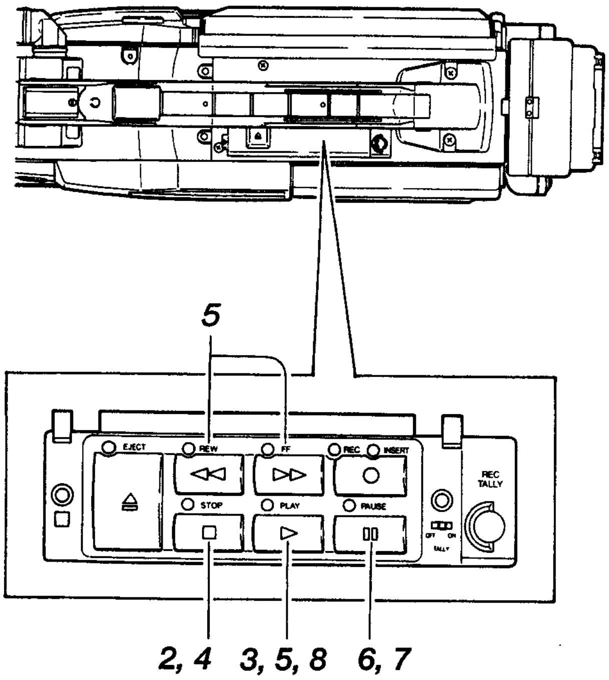
VIDEO AUTO LEVEL CONTROL (ALC) CIRCUIT

The Quick Record mode incorporates a Video Auto Level Control (ALC) circuit. This keeps the video level constant through the combined use of auto iris, electronic shutter, and sensitivity boosting.

- Under standard lighting conditions, the video level is kept constant by the auto iris.
- If the light increases and the iris is closed to its smallest aperture, the video level is kept constant by changing the shutter speed to lower light sensitivity.
- If the light decreases and sensitivity is insufficient even at maximum iris aperture, the electric gain circuit is activated to increase the sensitivity by 1 step. Since this is a stepping system (non-linear), the picture becomes brighter suddenly, resulting in unnatural scene continuity. To prevent this, the GY-X2B uses a system which activates both the gain-up and electronic shutter simultaneously, balancing the "plus" of the gain-up with the "minus" of the shutter to keep the video level constant.

  When the gain-up is functioning, ALC operation is performed by changing the shutter speed. If lighting should again become insufficient, the gain is boosted by 1 more step and the same operation is performed. The gain-up operation continues up to 18 dB.

PLAYBACK OPERATION


5
EJECT
REW
FF
REC
INSERT
STOP
PLAY
PAUSE
REC TALLY
OFF ON
TALLY
2, 4
3, 5, 8
6, 7

WARNING: TO AVOID ERASING MASTER MATERIAL, **PRESS STOP IMMEDIATELY** AFTER LOADING CASSETTE FOR PLAYBACK.

To play back the tape:

1. Load a recorded cassette and make sure that the unit is in the Record-Pause mode.
The Pause and Record LED are light up to red.

2. Press the STOP button.

3. Press the PLAY button.
Playback pictures will be seen on the viewfinder screen.

4. Press the STOP button to stop playback.

To search at high speed:

5. Press the REW or FF button while in the Play mode; reverse or forward search will start. To restore normal playback, press the PLAY button.
The search speed is 5 times normal in both directions.

- During search, there may be noise or loss of color in the picture or the picture may become monochrome. This is normal and not a defect of the unit.
- Hi-Fi audio is not output during search.

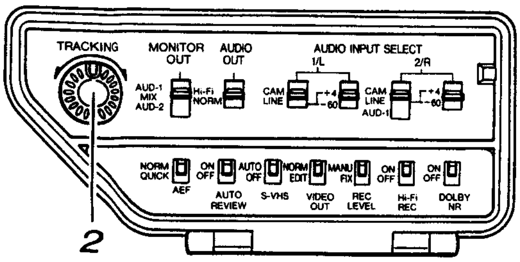
To play stills or advance frames:

6. Press the PAUSE button for still picture playback.

7. Press again for frame advance. Keeping it pressed advances frames continuously.

8. Press the PLAY button to restore normal playback.

- To protect the tape and video heads if still playback continues for a long time, the tape is advanced by a few frames after about 3 minuts 30 seconds and again after about 7 minutes. After about 10 minutes 30 seconds the head drum stops rotating.
- Noise or vertical vibration in the picture may appear. This is normal.


TRACKING
MONITOR OUT
AUDIO OUT
AUDIO INPUT SELECT
1/L
2/R
AUD-1
MIX
AUD-2
Hi-Fi
NORM
CAM
LINE
+4
-60
CAM
LINE
AUD-1
+4
-60
NORM
QUICK
AEF
ON
OFF
AUTO
OFF
AUTO REVIEW
NORM
EDIT
S-VHS
MANU
FIX
VIDEO OUT
ON
OFF
REC LEVEL
ON
OFF
Hi-Fi REC
DOLBY NR
2

TRACKING CONTROL

To perform tracking adjustment when the playback picture is too grainy or contains noise.

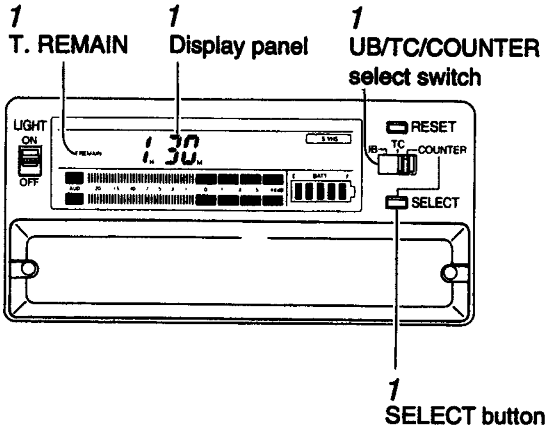
1. Play back the tape.

2. Turn the TRACKING control slowly to reduce noise while checking the playback picture. Normally, set the control to its center position.

REMAINING TAPE TIME DISPLAY

1. The remaining tape time is displayed on the display panel. Set the UB/TC/COUNTER select switch to "COUNTER". "T. REMAIN" appears and the remaining time is displayed. Press the SELECT button to restore to the tape counter display. The remaining tape time is displayed in 1-minute increments.

- Just after recording is initiated, the display shows "– H – – M". The remaining time will be displayed after a few seconds.
- The remaining tape time is approximate estimate time. Actual remaining time may be different.
- Figures may blink while the remaining tape time is being displayed. This is normal and is not a malfunction.


1
T. REMAIN
1
Display panel
1
UB/TC/COUNTER
select switch
LIGHT
ON
OFF
1. 30.
RESET
UB
TC
COUNTER
SELECT
1
SELECT button

RETAKE FUNCTION BY EDIT SEARCH

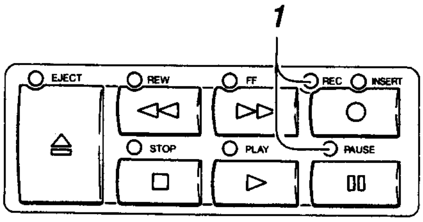
The retake function allows checking of the record picture without leaving the Record-Pause mode. Determine the point at which you want to strart the next take while checking the search picture at normal speed in either direction.

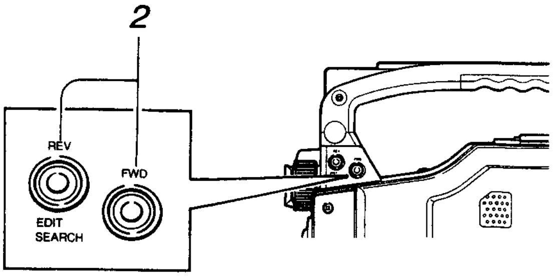
1. Make sure that the unit is in the Record-Pause mode, and Pause and Record LED are light up to red.

2. To search in the reverse direction, keep the REV button depressed. To search in the forward direction, keep the FWD button depressed. When the button is released, the Record-Pause mode will be engaged.

Notes for VTR operation

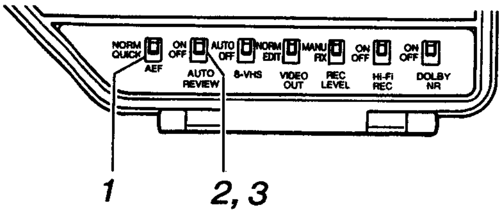
- When recording in the VHS mode on a tape previously recorded in the S-VHS mode, it is not possible to search or edit S-VHS recordings.

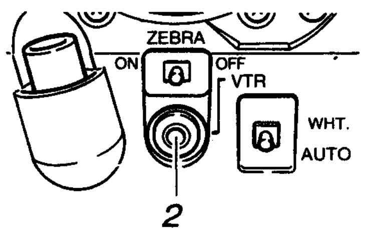

1
EJECT
REW
FF
REC
INSERT
STOP
PLAY
PAUSE


2
REV
FWD
EDIT
SEARCH

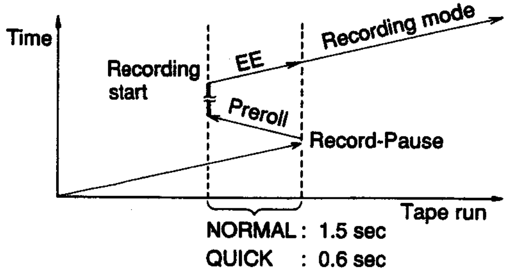
ADVANCED FUNCTIONS – VTR

AEF (AUTOMATIC EDITING FUNCTION)

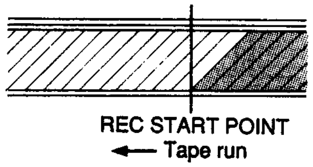

NORM QUICK
AEF
ON OFF
AUTO REVIEW
AUTO OFF
NORM EDIT
S-VHS
MANU FIX
VIDEO OUT
REC LEVEL
ON OFF
HI-FI REC
ON OFF
DOLBY NR
1
2, 3


ZEBRA
ON
OFF
VTR
WHT.
AUTO
2

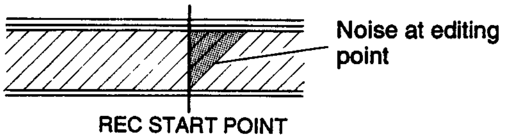
AEF : NORM
AUTO REVIEW : OFF


Time
Recording start
EE
Recording mode
Preroll
Record-Pause
Tape run
NORMAL : 1.5 sec
QUICK : 0.6 sec

- Flying erase head


REC START POINT
Tape run

- Fixed head


Noise at editing point
REC START POINT

NORMAL

1. Set the AEF select switch to NORM to activate the Automatic Editing Function (AEF).

2. With the AEF activated, pressing the recording start/stop trigger prerolls the tape for about 1.5 seconds (with AUTO REVIEW switch set to OFF) and the unit enters the Record-Pause mode. When the Record-Pause mode is disengaged and recording is started, no recording takes place in the initial 1.5 seconds in order to allow tape running to stabilize for assemble shooting with clean scene tansitions. (Called "backspace editing".)

QUICK RECORD

- This unit incorporates a rotary erase head and frame servo circuitry to provide clean assemble shooting without rainbow noise (color beats). However, with the AEF select switch to "QUICK", the tape is prerolled for only 0.6 seconds to permit quick recording start. Scene transitions will be blurred in this mode.

Note

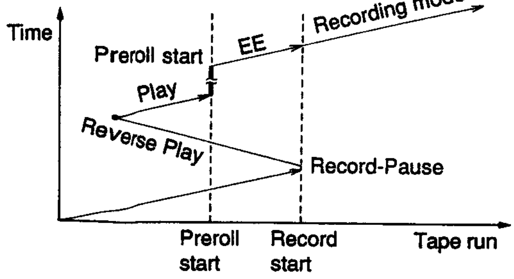
- Some frames may be dropped if the unit is moved or subjected to excessive vibration while in the Record-Lock or Record-Pause mode.

FLYING ERASE HEAD

The rotary erase head erases the video tracks consecutively. When recording video signals, the rotary erase head erases each track just before the video head records on the track.
This prevents the rainbow noise that appears with fixed erase head.

AUTO REVIEW

AEF : NORM
AUTO REVIEW : OFF


Time
Preroll start
EE
Recording mode
Play
Reverse Play
Record-Pause
Preroll start
Record start
Tape run

3. Set the AUTO REVIEW switch to ON to activate the Auto Review function. This function rewinds the tape when the Record-Pause mode is engaged and plays back a brief portion of the last-recorded segment to confirm that the recording is satisfactory.

- With the AEF switch set to NORM, the tape reverse plays about 4.5 seconds, then played back for about 3 seconds. After playback the unit enters the Record-Pause mode.

- With the AEF switch set to QUICK, the tape reverse plays about 3.6 seconds, then played back for about 3 seconds. After playback the unit enters the Record-Pause mode.

INSERT RECORDING

The GY-X2B's insert-recording capability allows previously-recorded video and Hi-Fi audio signals to be replaced with new material.

1. Preparations

- Set the POWER switch to ST-BY.
- Insert a pre-recorded tape.
- Open the VTR panel cover and check the indicators to ensure that the unit is in the Stop mode. (If not, press the STOP button to engage the Stop mode.)
- Select the Counter mode of the display panel.

2. Set the edit-out (insert-out) point

- Press the PLAY button to engage the Play mode. When the point you want insert recording to end is reached, press the PAUSE button to engage the Still mode.
- Press the counter RESET button to set the counter reading to "0000".

3. Set the edit-in (insert-in) point

- Press the REW button to rewind the tape to locate the point you want to start insert recording. When reached, press the PAUSE button to engage the Still mode.

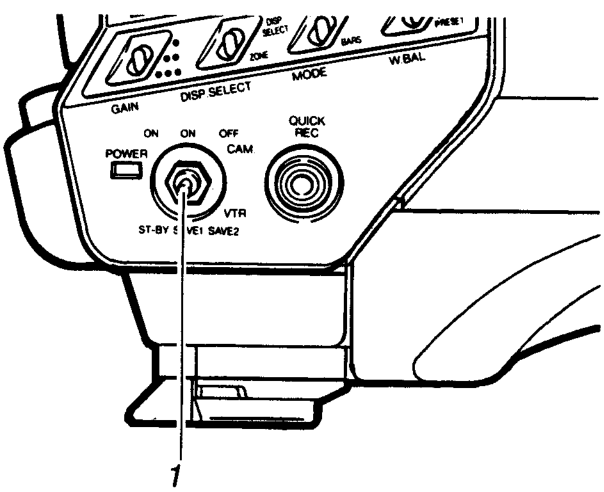
4. Engage the Insert-Pause mode

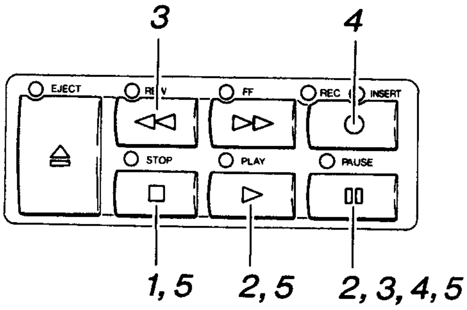
- In the Still mode, press the REC button simultaneously to engage the Record-Pause mode.
- Press the INSERT (REC) button simultaneously to engage the Insert-Pause mode. Both the INSERT and PAUSE indicators light.

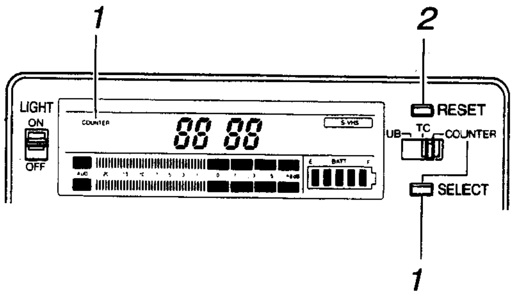
5. Starting and stopping insert recording

- Press the PLAY button to start insert recording. To stop recording before the edit-out point, press the PAUSE button.
- Insert recording stops automatically at the tape counter reading of "0000", and the unit enters the Play mode.
- In the Insert-Recording mode, both the INSERT and PLAY indicators remain lit. The video and Hi-Fi audio tracks are in the Record mode, while the normal audio tracks are in the Play mode.
- During insert recording, press the STOP button to stop the insert recording, the tape is unloaded and the unit enters the Stop mode.

- Normal audio cannot be inserted.
- During insert recording, pre-recorded Hi-Fi audio is erased even if the Hi-Fi REC ON/OFF switch is set to OFF.
- Insert recording is not possible on a video tape on which the control signals have been recorded improperly or not at all. If a no-signal tape portion (no control signals) is reached during insert recording, the unit automatically enters the Play mode.
- To protect the tape and video heads, the tape is unloaded and the unit enters the Stop mode if the Insert-Pause mode is continued for about 10 minutes 30 seconds.
- If tracking is not adjusted, proper insert recording is not possible. Adjust the tracking control beforehand to minimize noise.

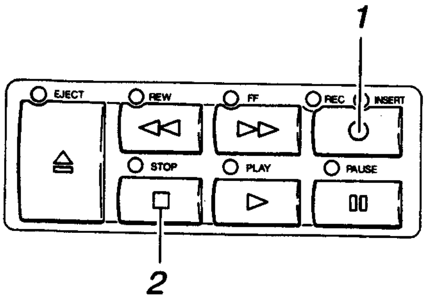


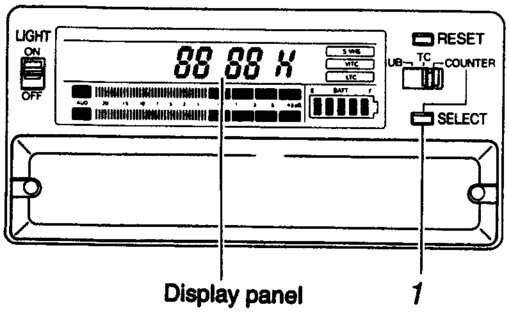




• Service Information:
If the VTR trigger button is pressed in recording, a sound (ticking) generated by pressing the trigger button may possibly be recorded since the VTR starts to enter the Stop mode with reception of the trigger signal. When the AEF switch is set to "QUICK", such a noise recorded part is erased by overlapping, on the other hand, if the switch is set to "NORM", that part is not overlapped and the trigger noise remains in the recording.
However, if setting of the VTR's internal switch is changed, it makes rerecording in such the part possible with activation of frame servo even in the AEF mode.
For detail, refer to "1.2 Internal switches" of the service manual for the BR-S422 (Manual No. 9277(U Ver.)/No. 9288(E ver.)).

HOUR METER



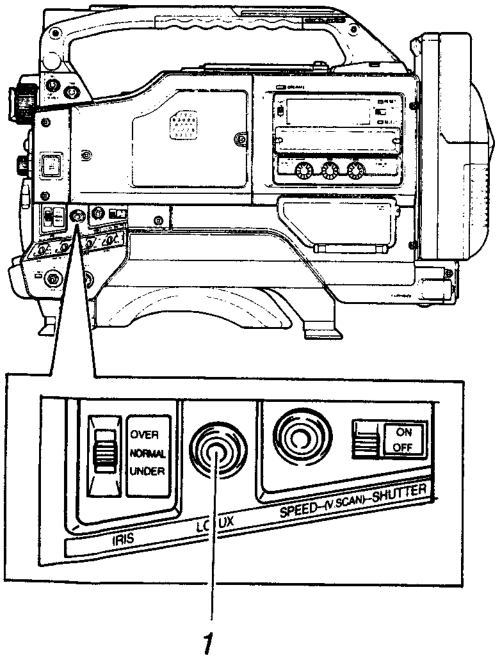


The display panel also features an hour meter function (accumulated head drum operating time).

1. Remove the cassette and shut the cassette holder. Press the REC and SELECT buttons simultaneously, keeping them depressed for about 3 seconds.
   The head drum's accumulated operating time of head drum is displayed on the display panel as a 4-digit number.
2. Press the STOP button to restore the regular tape counter display.

ADVANCED FUNCTIONS – CAMERA

LOLUX MODE



With this function a good dynamic range of brightness will be captured even under conditions where it is difficult to see with the human eye.
Because this is a 3 CCD chip camera the color rendition will also be true to life.
LOLUX enables shooting at 1.5 lx or 0.15 footcandles at F1.4.
One footcandle is the equivalent of the amount of light cast by one candle at a distance of one foot.

The basic underlying principle of LOLUX is to combine the light gathering capacity of the CCD chip.
The signal to noise ratio and the resolution are reduced, but it is possible to shoot subjects otherwise impossible.

BASIC OPERATION:

1. Push the LOLUX button momentarily to engage the function. Push again to disengage.
   The regular GAIN settings will be inactive, but the Auto Iris will operate normally.

Notes:

- Because LOLUX is very high gain mode, white dots may be shown on the picture.
  See "CAMERA PRECAUTIONS" on page 5.
- In the LOLUX mode, the electronic shutter, variable scan and ALC cannot be used.

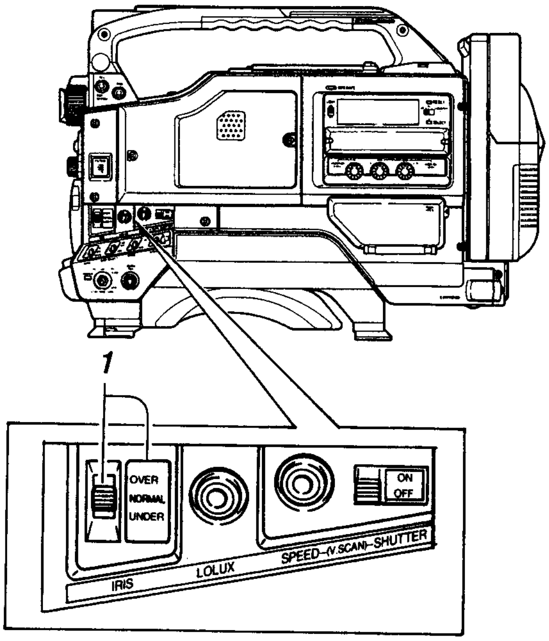
IRIS

IRIS COMPENSATION SWITCH (OVER/NORMAL/UNDER)

1. This switch compensates by about a 1/2 F stop for both over- and under-exposure in the auto iris mode.

OVER : For about 1/2 F stop over-exposure from the standard.
NORMAL : Restore to standard.
UNDER : For about 1/2 F stop under-exposure from the standard

> **Note**
> This function is operable in the auto iris mode only. If the iris is near its full open or close position, this function may not be operable.


1
OVER
NORMAL
UNDER
ON
OFF
IRIS
LOLUX
SPEED-(V.SCAN)-SHUTTER

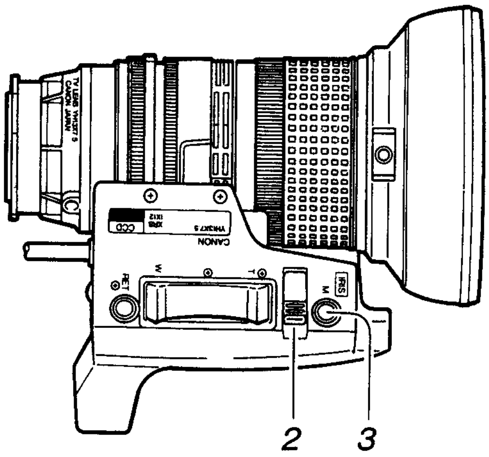
Lens YH13X7.5K12 (optional)

AUTO IRIS SETTING

The auto iris mode can be engaged in either of the following ways.

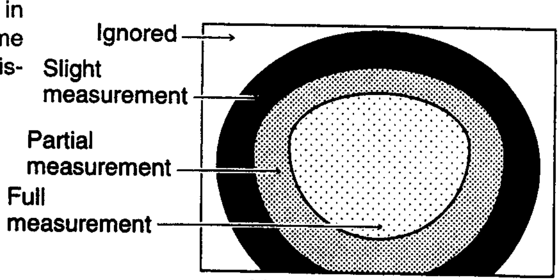
2. Auto iris switch
Set the auto iris switch on the lens.
A : Auto iris, remote operation
M : Manual iris

3. Auto iris override button
In the manual iris mode, the auto iris functions as long as this button is kept pressed.


CANON
IRIS
A
M
RET
2
3

MULTI-ZONE LIGHT METERING

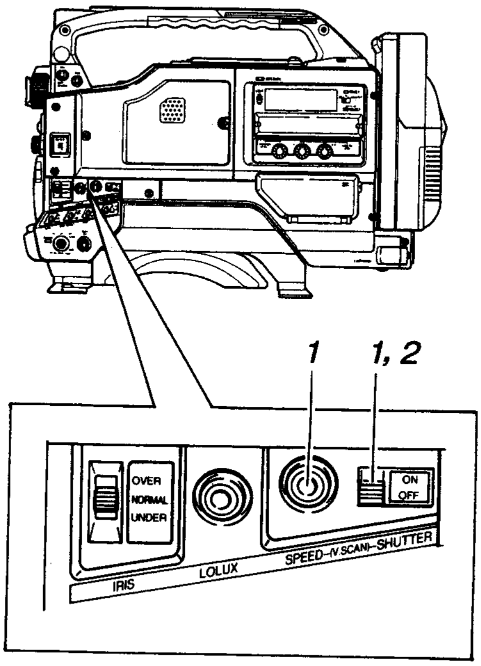
The GY-X2B utilizes the multi-zone light metering system in the auto iris mode. It is set to give the center area of the frame highest priority, with metering priority decreasing as the distance from the center increases.


Ignored
Slight measurement
Partial measurement
Full measurement

Multi-zone light metering

• Service Information:
In ALC operation (QUICK REC mode, etc.), speed setting of the electronic shutter is ineffectual because video level is controlled by the variable electronic shutter function (EFI).

ELECTRONIC SHUTTER



• Service Information:
Vertical scan rate is easily found from the color of the belt appearing in the monitor screen.
• When belt is white: Scan rate is higher than 60* Hz (Belt disappears by variable scan.)
• When belt is black: Scan rate is lower than 60* Hz (Variable scan cannot deal with scanning at this rate)
*50 Hz in E version camera.

The electronic shutter mode which offers higher shutter speeds is effective when shooting fast-moving objects that may be analyzed later in playback. While the standard shutter speed is 1/60 second, the electronic shutter mode offers five speeds: 1/100, 1/250, 1/500, 1/1000 and 1/2000 second.

1. Set the shutter select switch to ON. Each time the SPEED button is pressed, the shutter speed changes as follows:

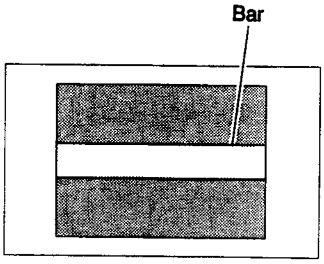
   → 1/100 → 1/250 → 1/500 → 1/1000 → 1/2000

   The selected shutter speed will be displayed for a few seconds on the viewfinder screen.

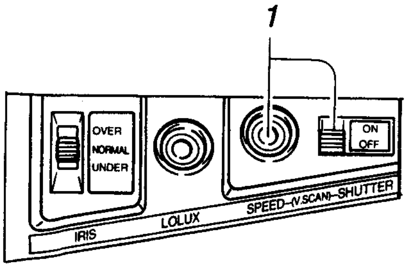
2. Set the shutter select switch to OFF to restore the shutter speed to standard 1/60 second.

- The higher the shutter speed, the lower the sensitivity. Brighter lighting is necesssary when using high shutter speeds. Do not use high shutter speeds in dimly lit places.
- In the auto iris mode, the iris is wider in the high speed mode than in the normal shutter mode. This also changes the depth of focus.
- When the high speed mode is used under fluorescent lighting, the picture may flicker.
- The electronic shutter mode cannot be used during quick recording and LOLUX mode.

VARIABLE SCAN FUNCTION



TV monitor



Note
This function does not respond to computer monitors with vertical scanning frequencies below 60 Hz (such as 50 Hz).

■ Variable scan

This function sets the shutter speed to match the vertical scanning frequency of computer monitor screens.
When shooting computer display images with a video camera, a bright, over-exposed horizontal bar appears on the screen if the monitor's scanning speed is faster than the camera's shutter speed, and a dark, under-exposed bar appears if the scanning speed is slower.
Since the scanning frequency of the monitor in use may vary, set the camera's scanning speed while checking the image on the viewfinder screen.

- **Operation**
  Set the shutter switch from OFF to ON while keeping the speed button pressed. Then, press the speed button to change the speed. Each time the button is pressed, the speed is increased.

- **Response range:**
  The GY-X2B can respond to scanning frequencies ranging from 60.1 Hz to 2084.6 Hz in 255 steps.

Steps 1 to 100 correspond to 1/60.1 to 1/96.7 sec., and steps 101 to 200 correspond to 1/97.3 to 1/251.5 sec. The first 1 to 100 steps can respond to most computer displays. The scanning frequency used varies with each computer, so we recommend you check the image on the viewfinder screen or an external monitor.

USING AS A STUDIO CAMERA

CONNECTION TO AN EXTERNAL VTR AN AUDIO EQUIPMENT

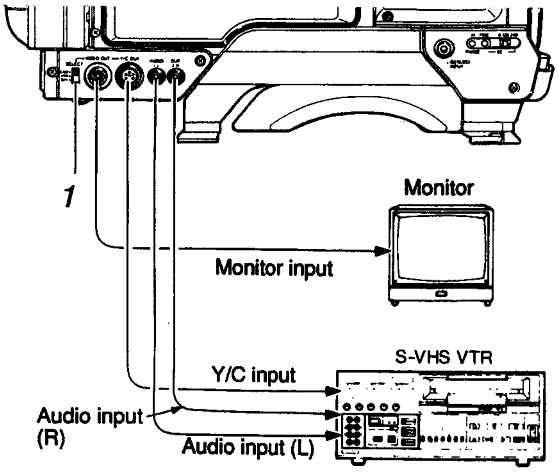
When recording the signals being shot with this unit onto another VTR, connect as illustrated on the left.

1. Select the video output select switch to "CAM" or "VTR".

- **When using a VHS VTR (not S-VHS), the use of the VIDEO OUT connector is recommended.**
- The VITC time code can be inserted into the signal output from the VIDEO OUT connector, if an optional SA-R200 time code generator is in use.
- **The start/stop trigger signal cannot be delivered to the external VTR.**

Note

When power switch is turned from "SAVE1" to "ST-BY" mode, audio signal may be interrupted and video signal may have noise.
If it is connected with other units, using the camera with "ST-BY" mode is recommended.



GENLOCKING

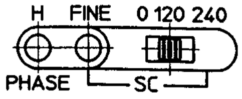
When multiple camera signals are processed via an SEG for fades, mixes, wipes, etc., all cameras must be synchronized by genlocking. For this purpose, apply a composite video signal (VBS) or black burst (BB) to the camera's GENLOCK INPUT terminal.

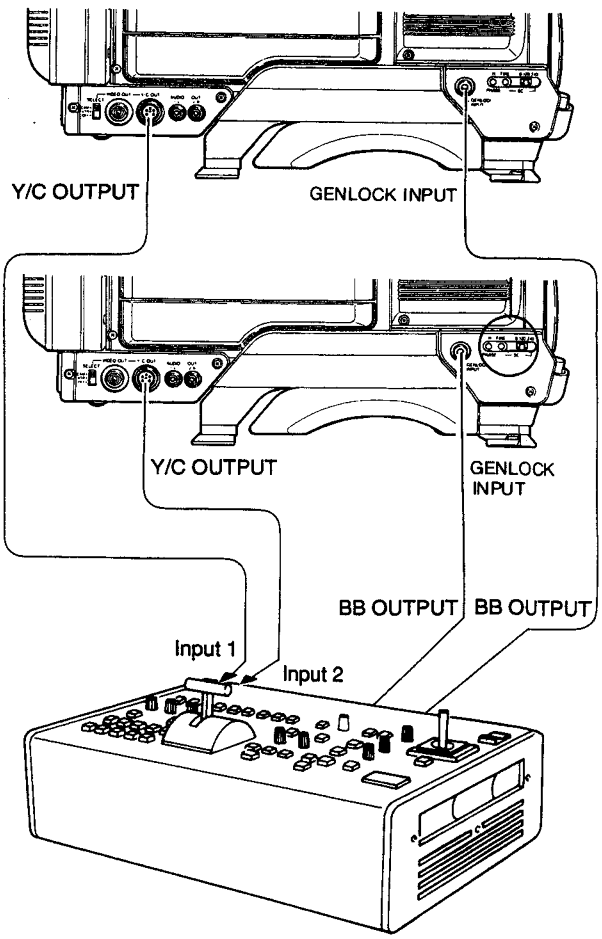
- It is not possible to genlock this unit with the VTR playback signal. This could cause a sync failure or hue fluctuations. This is not due to any defect of the unit, but because the VTR playback signal contains timebase errors corresponding to the rotary system's wow and flutter.
  If the VTR playback signal is to be used as a reference signal, correct it using a timebase corrector.

Phase adjustment

The figure shows an example of a camera-SEG system. When two or more cameras are used, the horizontal phase and color phase of their output signals must coincide with each other with respect to the reference signal externally applied to the cameras.
For adjusment, use the following switches and controls on the left side of the camera.

Horizontal sync phase:	H control
Color sync phase:	Coarse switch 0, 120°, 240° FINE control ±60°

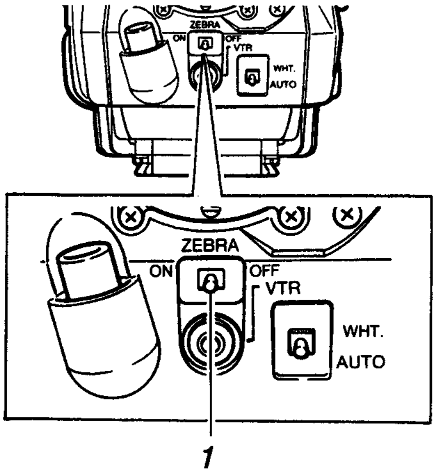




- For adjustments, consult the dealer from whom you purchased this unit or an authorized JVC Service agent.

• Service Information:
For adjustment of genlock with use of an SEG, refer to the following instructions.

VIDEO LEVEL INDICATION

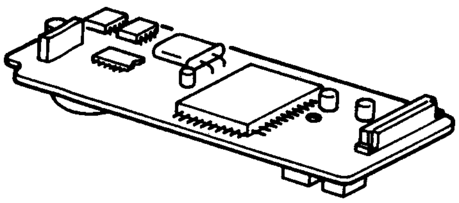


A zebra pattern shows the portion of the video signal of which is about 85 % to 95 %. Refer to this indication when adjusting the iris manually, or choosing gain or shutter settings.

1. ZEBRA switch ON : **Indication on**
ZEBRA switch OFF : **Indication off**

TIME CODE GENERATOR SA-R200 (Optional)

SA-R200 TIME CODE GENERATOR



The SA-R200 is a time code generator board specifically designed for installation in the GY-X2B. SMPTE-standard LTC or VITC time code recording is possible. (LTC is recorded on the AUD-2 normal audio track.)

- If the time code has run for more than 30 minutes in the Free Run mode, it will keep running for at least 30 minutes even after the recorder's power is turned off.

Note

- **When the AEF is set to "QUICK" in the Rec Run mode, time code continuity will be lost at the edit point.**
- If the Record-Pause mode is engaged during time code recording in the Rec Run mode, time code data will be missing for several frames at the point where recording is re-started.
- Since the time code is not continuous, it is a good practice to allow at least 5 seconds of record time at the start of each shot so that the scene can be successfully edited later. Edit controllers must have continuous time code during preroll.

INSTALLATION

The SA-R200 is designed to be installed inside the GY-X2B. For more details on installation, consult your local JVC service agent.

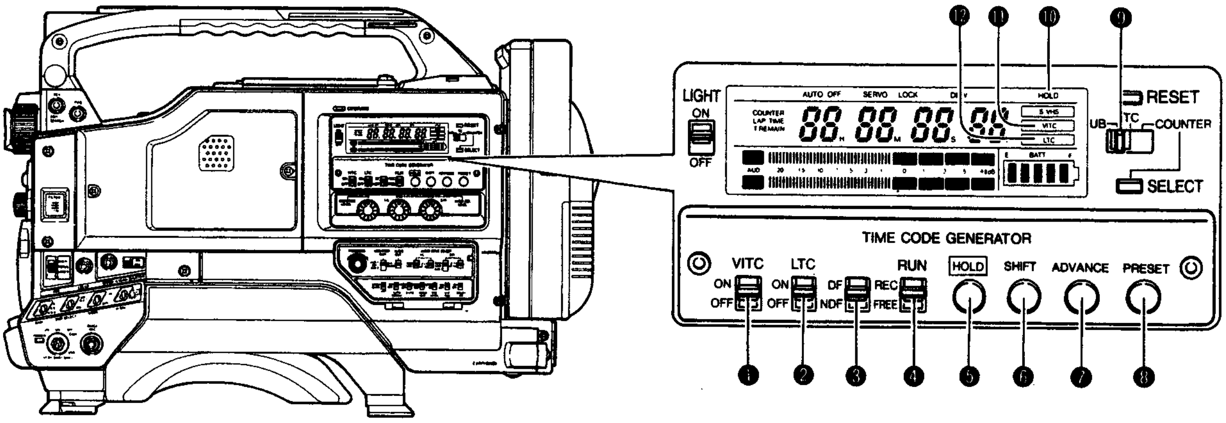
LINE SELECTION

The SA-R200 utilizes the VITC system that inserts the time codes into the vertical blanking.
Lines on which VITC data is to be inserted are preset at the factory: 16 H and 18 H.
Lines can be selected in the range from 10 H to 25 H (except for 17 H). For details, consult your JVC service agent.

• Service Information:
The line 17(11) is occupied for recording the AEQ (Automatic Equalizer) reference signal. Do not select the line 17(11) for VITC insertion.
If you want to modify the setting. refer to the service manual (no. 9277 for U version/No. 9288 for E version)

The line 17 is occupied for recording the AEQ (Automatic Equalizer) reference signal. Do not select line 17 for VITC insertion. If you want to modify the setting, consult your JVC service agent.

TIME CODE GENERATOR – CONTROLS AND OPERATIONS


⓬ ⓫ ❿ ❾
LIGHT
ON
OFF
AUTO OFF
SERVO
LOCK
HOLD
COUNTER
LAP TIME
T REMAIN
S-VHS
VITC
LTC
BATT
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
RUN
HOLD
SHIFT
ADVANCE
PRESET
ON
OFF
ON
OFF
DF
NDF
REC
FREE
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

❶ **VITC ON/OFF switch**
ON : To record VITC time codes
OFF: VITC time codes are not recorded.

❷ **LTC ON/OFF switch**
ON : To record LTC time codes. When set to this position, AUD-2 normal audio cannot be recorded.
OFF: LTC time codes are not recorded.

❸ **DF/NDF mode select switch**
DF : To record time codes in the drop-frame mode.
NDF: To record time codes in the non-drop-frame mode.

> **Note on Drop-Frame**
> The SA-R200 time code generator separates the frame pulse of the supplied video signal for sync. When the frame pulse in the video signal is counted at 60 fields (30 frames) per second and converted into time, this results in time error accumulating with elapsed time since the actual number of fields per second is 59.94. To compensate for this and match the tape time with real time, some frames must be dropped.

❹ **RUN REC/FREE RUN switch**
REC : The time code runs only during recording. (Rec Run mode; used to time the recording)
FREE : The time code runs in real time, regardless of the recorder's operating mode. (Free Run mode; used when operating in real time, as a clock)

❺ **HOLD button**
Used when setting the time codes and user bits.

❻ **SHIFT button**
Shifts the blinking digit to the right.

❼ **ADVANCE button**
Advances the value of the blinking digit.

❽ **PRESET button**
Transfers the data set with the HOLD, SHIFT, and ADVANCE buttons to the time code generator.

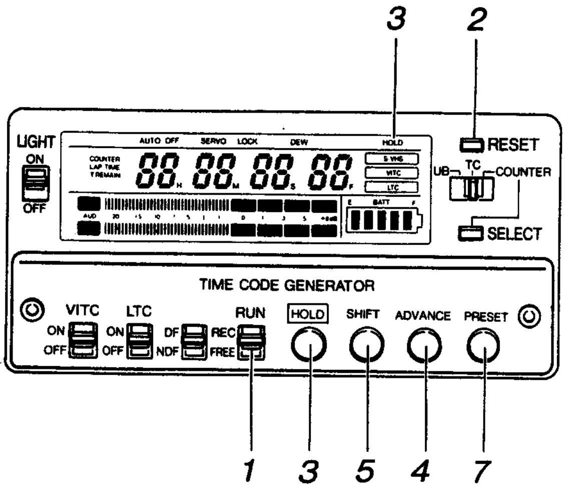
❾ **UB/TC/COUNTER select switch**
Selects the display mode on the counter.
UB : Displays user bits.
TC : Displays time code data.
COUNTER : Displays tape counter modes selected with the SELECT button.

❿ **HOLD indicator**
Comes on when the HOLD button is pressed.

⓫ **VITC indicator**
Comes on when VITC is recorded.

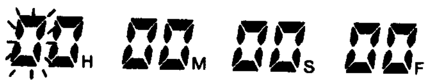
⓬ **LTC indicator**
Comes on when LTC is recorded.

TIME CODE SETTING

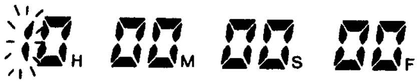

3
2
LIGHT
ON
OFF
AUTO OFF
SERVO
LOCK
DEW
HOLD
COUNTER
LAP TIME
T.REMAIN
88. 88. 88. 88.
S VHS
VITC
LTC
BATT
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
RUN
ON
OFF
DF
NDF
REC
FREE
HOLD
SHIFT
ADVANCE
PRESET
1
3
5
4
7

Either the current time or any required time can be set.

1. Set the RUN REC/FREE switch as desired.
2. Set the UB/TC/COUNTER select switch to "TC".
3. Press HOLD for more than 2 seconds.
   - The counter resets with the leftmost digit blinking.
   - The HOLD indicator comes on.


00. 00. 00. 00.
H
M
S
F

4. Press ADVANCE.
   This advances the value of the blinking digit. Set to the desired value.


10. 00. 00. 00.
H
M
S
F

5. Press SHIFT.
   The blinking digit shifts to the right.
6. Repeat steps 4 and 5 until all data is set.

Note
The maximum seting range is 23:59:59:29. Any value that exceeds this will be rejectd.

7. Press PRESET.
   The preset data will be transferred to the time code generator. The HOLD indicator goes off and the counter stops blinking.
   - In the Free Run mode, time code starts running.
   - In the Rec Run mode, time code starts running when the Record mode is engaged.

Notes
- When you want to correct the data, repeat steps 3 to 7.
- If you mistakenly press the HOLD button, press it again to cancel.

USER BIT SETTING

"User bits" is a portion of the time code signal allocated to the user. It can be used to record the operator number or reel numbers.
User bits are an 8-digit hexadecimal number, each digit of which can have values from "0" to "F". User bits are recorded on the tape together with time data.

1. Set the UB/TC/COUNTER select switch to "UB".

2. Press HOLD for more than 2 seconds.
- Counter shows "00:00:00:00" with leftmost digit blinking.
- The HOLD indicator will light.

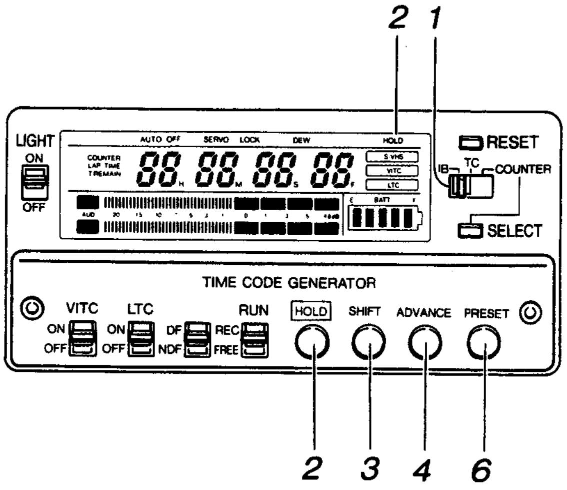
3. Press ADVANCE to set the value of the blinking digit as desired.
- All 8 digits can be changed from "0" to "F".

4. Press SHIFT to move the blinking digit.

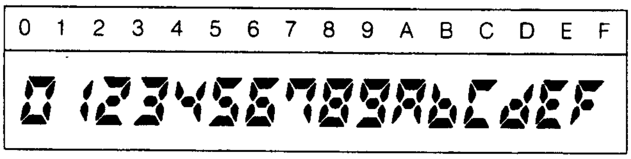
5. Repeat steps 3 and 4 until all data is set.

6. Press PRESET.
- The preset data will be transferred to the time code generator.
- Hold indicator goes off and the counter stops blinking.
- User bit data will not change regardless of the setting of the RUN REC/FREE switch.

Note
- When you want to correct the data, repeat steps 2 to 6.
- If you mistrakenly press the HOLD button, press it again to cancel.


2
1
LIGHT
ON
OFF
AUTO OFF
SERVO
LOCK
DEW
HOLD
COUNTER
LAP TIME
T.REMAIN
88.88.88.88
S.VHS
VITC
LTC
BATT
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
RUN
HOLD
SHIFT
ADVANCE
PRESET
ON
OFF
ON
OFF
DF
NDF
REC
FREE
2
3
4
6

Usable characters and their displays

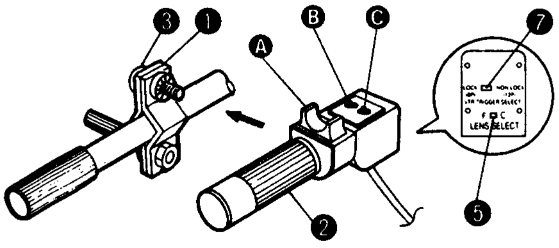


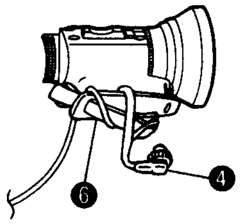
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

SA-R200 SPECIFICATIONS

Signal system : SMPTE-standard
Time set : 8 digits (hours, minutes, seconds, frames)
User bits : 8 digits
Power consumption: 0.05 W

REMOTE TRIGGER/ZOOM SERVO HZ-ZS13BU (optional)





- Remotely control the VTR Trigger, RET (Auto Review), and the Zoom servo by connecting this to the lens servo.
- Remote manual focus control is possible with the HZ-FM15U (Canon) or the HZ-FM13U (Fujinon).
- Controls are extended 80 cm.

Installation Notes:
- For the Canon Lenses the Lens select switch should be set to C, for all others set to F.
- Normally 8-pin lenses require the VTR select switch to be set to the "Lock" position, and 12-pin lenses require the "Nonlock" position. Check your lens manual.

Operation Notes:
- Do not zoom manually while in the automatic mode. This can damage the lens servo.
- Zoom speed may be different from lens zoom lever.
- Leave the Camera and Lens Triggers in the Off position.

Controls and Attachments:

Ⓐ Zoom Lever (left/right operation)
Ⓑ RET Switch
Ⓒ VTR Trigger
❶ Tripod Arm Mount
❷ Handle
❸ Handle angle Adjustment Screw
❹ Lens servo Connector
(Wrap cable around lens grip for safety.)
❺ Lens Select Switch
❻ Set Lens servo switch to SERVO.
❼ Set VTR trigger select switch for lens type.

JVC SERVICE FUNCTION OPTIONS

AVAILABLE FROM JVC SERVICE CENTER ONLY

- Maximum GAIN reduction from +18 to +9.
- ALC mode without Full Auto White can be assigned to maximum gain position.
- Full Auto White only can be assigned to White Balance Memory 2.
- The Lens trigger mode can be changed from a locked 8 pin lens to a non-locked 12 pin lens mode for user specified lens accessory.
- Settings such as auto iris, ALC and fulltime auto white which are automatically set when the quick recording function is engaged can be maintained until the power is turned off. However, the camera/color bars select switch can be operated only in the Pause mode.
- Zebra pattern can be displayed in the portion of the video level over about 95%.
- The contour emphasis level of the viewfinder screen can be changed. However, the more the contour emphasis level is raised, the more the noise on the viewfinder screen increases. This change is effective only for the viewfinder screen.

IN CASE OF DIFFICULTY (TROUBLESHOOTING GUIDE)

Symptoms	Check Points
No power is applied to the unit.	● Is the power supply unit properly connected? ● Is the battery pack charged?
Cassette cannot eject after the power is turned on.	● The power supply unit's capacity may be insufficient. Check the power voltage. ● If the power is turned off within 1 second of opening the cassette holder, the cassette holder may not close properly.
Recording cannot be started.	● Is the safety tab on the cassette removed? Reseal the slot with adhesive tape.
Playback picture is blurred or interrupted.	● Video heads may be dirty. Head cleaning is necessary. Consult your JVC dealer.
Noise appears during playback.	● Adjust the tracking control.
VTR operation is not possible.	● Is the power switch set to SAVE1 or 2? Set it to ST-BY.
Tape will not play, rewind or fast-forward.	● Is the tape already fully rewound or fast-forwarded?
Viewfinder image looks dark or unclear.	● Adjust the contrast control. ● Is the filter switch set to 5600+ND? ● Is the iris closed? ● Is the shutter speed too fast? ● Is the viewfinder calbe correctly connected?
Normal Audio 2 cannot be recorded.	● The LTC time code switch may be on (even without the SA-R200 Time Code Generator). Audio 2 is not recorded.
No picture, No playback from VTR video out connector.	● VIDEO OUT SELECT switch may be set to OFF or CAM. Switch this to VTR.

ACCESSORY LIST

Standard Accessories

Electronic viewfinder : 1.5-inch viewfinder
Tripod base : KA-510
Microphone : SCV2084-001

Optional Accessories

Studio viewfinder : VF-P400
Power zoom lens : YH13X7.5K12
AC power adapter : AA-P250
DC battery pack : NB-G1 (12 V, 2.2 AH)
Microphone : MV-P612, MV-P602, M-K50
Microphone holder : KA-A30
Remote trigger/
Zoom servo control : HZ-ZS13BU

SPECIFICATIONS (for U version)

- **CAMERA SECTION**

Image pickup device : 1/2-inch interline CCDs
Color separation
  optical system : 3-color separation prism
Number of
  effective pixels : 380,000 pixels
Color system : NTSC (R-Y, B-Y encoder)
Color bars : SMPTE type
Sync system : Internal/external sync (auto)
Lens mount : Bayonet system
  (FB 35.74 mm, 1/2" CCD cameras)
Optical filter : 3200 K, 5600 K, 5600 K + ND
Sensitivity : F8, 2000 lx
Gain : 0, +9 dB, +18 dB, LOLUX
Minimum illumination: 7.5 lx with F1.4, +18 dB gain
Lolux minimum
  illumination : 1.5 lx with F1.4
S/N ratio : 62 dB (typical)
Horizontal resolution : 750 lines (luminance signal)
Registration : 0.05 % or less (excluding lens distortion)
Contour correction : Horizontal dual-edged,
  Vertical dual-edged
Shutter speed : 1/100, 1/250, 1/500, 1/1000, 1/2000
Variable scan : 60.1 Hz to 2084.6 Hz

- **VTR SECTION**

Format : VHS/S-VHS standard
Tape speed : 33.35 mm/sec
Record/playback time: 120 min (with T-120 cassette)
Fast forward/
  Rewinding time : 4 min 30 sec or less
  (with T-120 cassette)
Hi-Fi sound D range : More than 80 dB
Horizontal resolution : Color 400 lines or more (S-VHS mode)
  Color 240 lines or more (VHS mode)
Video S/N ratio : 46 dB (S-VHS mode)
  (color) 45 dB (VHS mode)
Audio S/N ratio : 48 dB (NR : ON)
  44 dB (NR : OFF)

- **INPUT/OUTPUT SIGNALS**

Video signal output : 1 Vp-p/75 ohms (BNC)
Lens : 12-pin connector
Y/C signal output : Y ; 1 Vp-p/75 ohms,
  C ; 0.286 Vp-p/75 ohms (Burst),
  7-pin connector
DC input : 12 V DC (11.0 to 15.0 V DC)
Genlock input : VBS 1 Vp-p or BB 0.43 Vp-p/75 ohms
  (BNC)
Microphone input : –52 dBs (6-pin), Unbalanced
Audio input : +4 dBs/10 kohms (select the switch)
  –60 dBs/3 kohms (select the switch),
  (XLR3), Balanced
Audio output : –6 dBs/1 kohm (RCA), Unbalanced
Earphone output : –60 dBs to –12 dBs/8 ohms
  (ø3.5 mini-jack)

- **GENERAL**

Power consumption : 25.2 W (including the lens and viewfinder)
Weight : Approx. 6 kg (13 lbs) (incl. viewfinder)
Operating
  temperature range : 0°C to +40°C (+32°F to +104°F)
Storage
  temperature range : –20°C to +60°C (–4°F to +140°F)

- **1.5-inch VIEWFINDER**

CRT : 1.5 inch
Resolution : 600 lines
Input signal : Composite 1 Vp-p, high impedance
Available functions : Top tally lamp (with ON/OFF switch)
  Low battery indicator (RED)
  Recording indicator/tape trouble alarm
  (GREEN)
  Contrast control
  Brightness control
Diopter control : Provided
Power requirements : 12 V DC, 3 W

SPECIFICATIONS (for E version)

- **CAMERA SECTION**

Image pickup device : 1/2-inch interline CCDs
Colour separation
  optical system : 3-colour separation prism
Number of
  effective pixels : 440,000 pixels
Colour system : PAL (R-Y, B-Y encoder)
Colour bars : EBU colour bar
Sync system : Internal/external sync (auto)
Lens mount : Bayonet system
  (FB 35.74 mm, 1/2" CCD cameras)
Optical filter : 3200 K, 5600 K, 5600 K + ND
Sensitivity : F8, 2000 lx
Gain : 0, +9 dB, +18 dB, LOLUX
Minimum illumination: 7.5 lx with F1.4, +18 dB gain
Lolux minimum
  illumination : 1.5 lx with F1.4
S/N ratio : 60 dB (typical)
Horizontal resolution : 750 lines (luminance signal)
Registration : 0.05 % or less (excluding lens distortion)
Contour correction : Horizontal dual-edged,
  Vertical dual-edged
Shutter speed : 1/120, 1/250, 1/500, 1/1000, 1/2000
Variable scan : 50.1 Hz to 2067.8 Hz

- **VTR SECTION**

Format : VHS/S-VHS Europe standard
Tape speed : 23.39 mm/sec
Record/playback time: 180 min (with SE-180 cassette)
Hi-Fi sound D range : More than 80 dB
Horizontal resolution : Colour 400 lines or more (S-VHS mode)
  Colour 250 lines or more (VHS mode)
Video S/N ratio : 45 dB (S-VHS mode)
  (colour) 45 dB (VHS mode)
Audio S/N ratio : 42 dB (NR : OFF)

- **INPUT/OUTPUT SIGNALS**

Video signal output : 1 Vp-p/75 ohms (BNC)
Lens : 12-pin connector
Y/C signal output : Y ; 1 Vp-p/75 ohms,
  C ; 0.3 Vp-p/75 ohms (Burst),
  7-pin connector
DC input : 12 V DC (11.0 to 15.0 V DC)
Genlock input : VBS 1 Vp-p or BB 0.43 Vp-p/75 ohms
  (BNC)
Microphone input : –52 dBs (6-pin), Unbalanced
Audio input : +4 dBs/10 kohms (select the switch)
  –60 dBs/3 kohms (select the switch),
  (XLR3), Balanced
Audio output : –6 dBs/1 kohm (RCA), Unbalanced
Earphone output : –60 dBs to –12 dBs/8 ohms
  (ø3.5 mini-jack)

- **GENERAL**

Power consumption : 25.2 W (including the lens and viewfinder)
Weight : Approx. 6 kg (13 lbs) (incl. viewfinder)
Operating
  temperature range : 0°C to +40°C (+32°F to +104°F)
Storage
  temperature range : –20°C to +60°C (–4°F to +140°F)

- **1.5-inch VIEWFINDER**

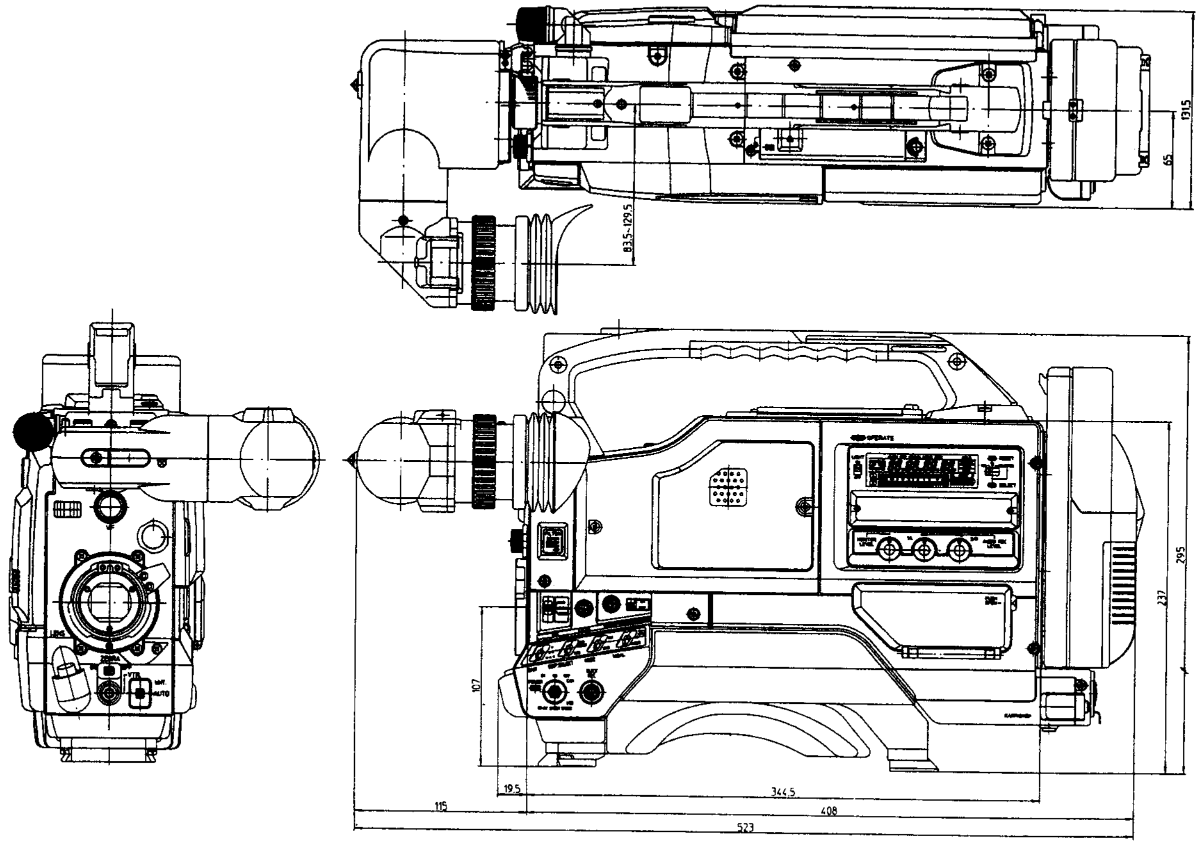
CRT : 1.5 inch
Resolution : 600 lines
Input signal : Composite 1 Vp-p, high impedance
Available functions : Top tally lamp (with ON/OFF switch)
  Low battery indicator (RED)
  Recording indicator/tape trouble alarm
  (GREEN)
  Contrast control
  Brightness control
Diopter control : Provided
Power requirements : 12 V DC, 3 W

INDEX

INDEX	Diagram	Page
AC Adapter		27
Audio: Input Connectors	73	16
Input Select(Cam/Line)	42, 44	13
(Levels)	43, 45	13
On Screen Level Indicator		20
Output Connectors	74	17
Output Select (Hi-Fi, Normal)	36	12
Monitor Selection (Ch-1, Ch-2, Mix)	37	12
Recording Level Controls	57	15, 32
Speaker/Earphone Control	56	15, 32
VTR Level Meter	66	15
Auto Editing Function (AEF)	39	13, 38
Auto-Off Indicator	62	15
Auto Review	40	13, 38
Auto Setup (White/Black Balance)	15	7, 31
Back Focus		30
Backlight (VTR Indicator)	51	15
Bars/Camera	22	9
Basic Shooting		33-34
Battery Capacity Meter	67	15
Battery Holder	6, 7	7, 27
Breaker (Power)	34	11
Camcorder Front		7
Camera Controls		8-9
Cassette Loading, Ejecting		29
Condensation (DEW) Indicator	64	15
Counter Mode Indicator	58	15
Counter/Time Code/User Bit Switch	54	15, 44-47
Counter/Remain Time/Lap Time Switch	55	15
DC Power Input	71	16, 27
Dolby NR	46	13, 32
Earphone Control, Jack	56, 72	15, 16, 32
Edit Search	4	6, 37
Eject	25	11
Exposure Indication (Zebra)	14	7, 44
Fast Forward/Search	33	11
Full Time Auto White		35
Gain	16	8
Genlock Connection	83	17, 43
H. Phase	95	17, 43
Hi-Fi Audio On/Off	47	13
Hi-Fi/Normal Audio Output Select	36	12
Hold (Time Code) Indicator	65	15
Internal Filter	12	7, 31
External Filter	Lens 13	18
In Case of Difficulties		48
Input/Output : Video, Audio, Power		16, 17
Insert Editing		39
Iris Auto/Manual	Lens 6, 3	18, 41
Iris Over/Under Compensation	18	9
Iris Speed Control	Lens 15	18
Lap Time/Remain Time/Counter Switch	55	15
Lap Time Mode Indicator	59	15
Lens		18
Lens Connector (12 pin)	8	7
Lens Installation		25
LoLux	19	9, 40
LTC (Time Code) Indicator	70	15, 44
Microphone Connection (CAM 6 pin)	79	17, 25-26
(External XLR)	73	16
(See Audio Input Control)	42-45	13
Monitor Output Select	37	12
Monitor Speaker	5, 37, 56	6,12,15,32
Monitor Level Control	56	14

INDEX	Diagram	Page
On Screen Display		20
Operate Lamp	50	15
Play	28	11, 36
Pause	32	11
Power/Operate	1	6, 29
Quick Editing		38
Quick Record	2	6, 35
Record/Insert	1, 2, 3	6,33-35,39
Recording Levels (Audio: Manual/Fixed)	48	13
Remain Time/Lap Time/Counter Switch	55	15, 37
Remain Time Mode Indicator	60	15
Remote Trigger/Zoom Control		48
Remote Zoom/Iris Connector	Lens 11	18
Reset Tape Time/Lap Time	53	15, 39
Review Playback		38
Rewind/Search	27	11
SC Fine Phase	81	17, 43
SC Phase Switch	80	17, 43
Service Function Options		48
Servo Lock Indicator	63	15
Shooting Operation		33-37
Shutter	20	9, 42
Speaker	5, 56	5, 15, 32
Specifications		49-50
Status Display	17	8, 20
Stop	26	11
S-VHS/VHS Mode Set	41	13, 32
S-VHS Mode Indicator	68	15, 32
Tally: (Viewfinder) Light	7	19
Switch	6	19
(VTR) Light	30	11
Switch	31	11
Time Code Generator Control	52	15, 44-47
Time Code/User Bit/Counter Switch	54	15
Timer/Counter Number Display	61	15
Tracking (Playback)	38	13, 36
Tripod Base		28
Trigger (Recording/Start Stop)	3, Lens 10	6, 18
User Bit/Time Code/Counter Switch	54	15
Variable Scan	20	9, 42
Video Output: Composite	76	16
Y/C	75	16
Video Output Select (Cam/VTR/Off)	77	16
Viewfinder		19, 24
Viewfinder Base/Retaining Ring	10	7
Viewfinder Connector	11	7
Video Level Indicator	14	7
Video Output Select	49	13
VITC (Time Code) Indicator	69	15, 44-47
VTR Controls		10-11
VTR Indicators	24	11, 14-15
VTR Setup Controls	35	12-13
VTR Setup/Tape Format Procedure		32
VTR Triggers	3, Lens 10	6, 18, 48
Warning Functions		22-23
White Balance Memories	21	9
White Balance (Auto)	15	7, 31
Zebra (Video Levels)	44	7, 21
Zoom Mode (Manual/Servo)	Lens 2, 8, 11, 12	18, 48

EXTERNAL DIMENSIONS (unit : mm)


131.5
65
83.5–129.5
295
237
107
19.5
344.5
115
408
523

JVC

VICTOR COMPANY OF JAPAN, LIMITED

No. 60096

GY-X2B

CAMERA HEAD SECTION

TABLE OF CONTENTS

Section Title Page
1. SERVICE CAUTIONS AND DISASSEMBLY .... 1 - 1
2. ELECTRICAL ADJUSTMENT .... 2 - 1
3. EXPLODED VIEWS AND PARTS LISTS .... 3 - 1
4. CHARTS AND DIAGRAMS .... 4 - 1
5. ELECTRICAL PARTS LIST .... 5 - 1
6. REPACKING .... 6 - 1

SECTION 1
SERVICE CAUTIONS AND DISASSEMBLY

1.1 RESET OF POWER BREAKER

This set is equipped with a power breaker for protecting circuits from overcurrent instead of power fuses.
To reconnect the power, reset the power breaker.

Note: When the power breaker is activated to cut off the power, make sure to investigate the cause and repair the failure before resetting it in order to avoid expansion of the failure.

1. Turn off not only the OPERATE switch of this set but also all the power switches of other devices that supply power to this set.
2. The power breaker Ⓐ is located at the rear bottom of the VTR section. Pressing the BREAKER button reconnects the power.

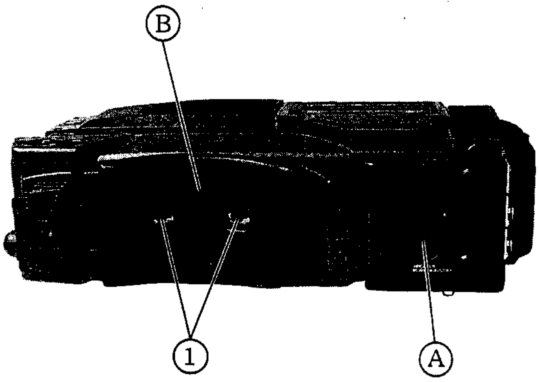


Fig. 1-1

1.2 REMOVAL OF BOTTOM FRAME

1. Remove two screws ① and detach the shoulder pad Ⓑ.
2. Remove four screws ② and detach the front base Ⓒ.

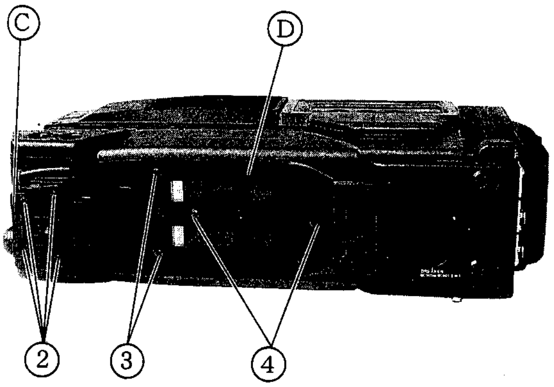


Fig. 1-2

3. Remove two screws ③ and two screws ④, then detach the bottom frame Ⓓ.

1.3 SEPARATION OF CAMERA AND VTR SECTIONS FROM EACH OTHER

1. Remove the bottom frame referring to the previous section 1.2.
2. Remove three screws ⑤ and detach the handle Ⓔ.
3. Remove two screws ⑥ and take off the side cover Ⓕ.
4. Remove two screws ⑦ and remove the VTR section rearwards.

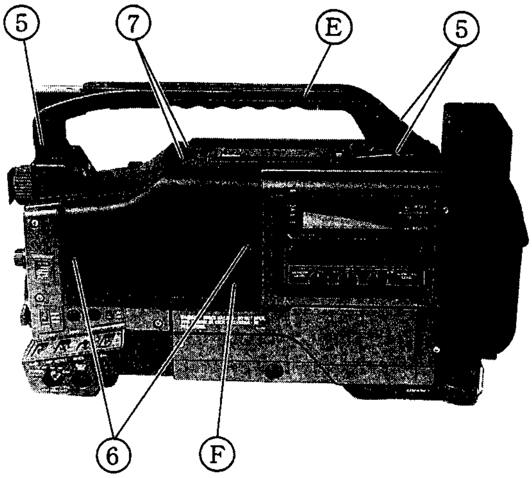


Fig. 1-3

5. The camera section and the VTR section are connected with the flat cable Ⓖ and the power cable Ⓗ.
Make sure to disconnect them with the connectors Ⓘ and Ⓙ after all power supplies are cut off.

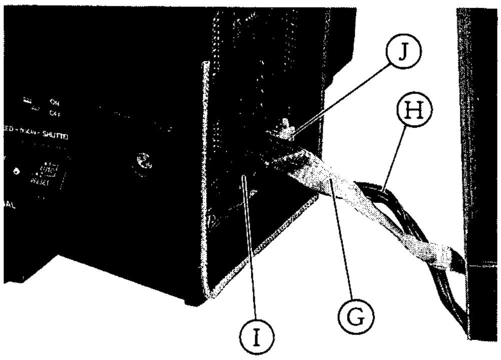


Fig. 1-4

1.4 REMOVAL OF OPTICAL BLOCK ASSEMBLY

1. Remove the bottom frame referring to the previous section 1.2.
2. Remove the both side covers of the camera section.
3. Remove two screws ⑧ respectively from the SE board and the CP board.

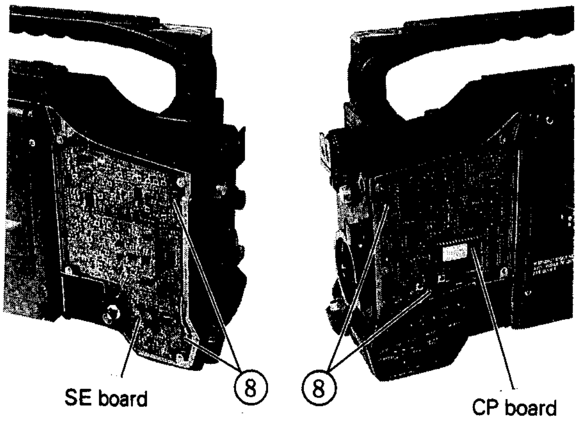


Fig. 1-5

4. The SE board and the CP board can be opened as shown below, and they can undergo servicing in this state.
5. Remove four screws ⑨ from the front panel Ⓚ.

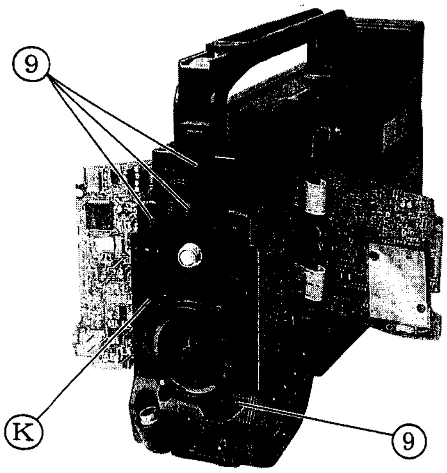


Fig. 1-6

6. Remove two screws ⑩ shown below.

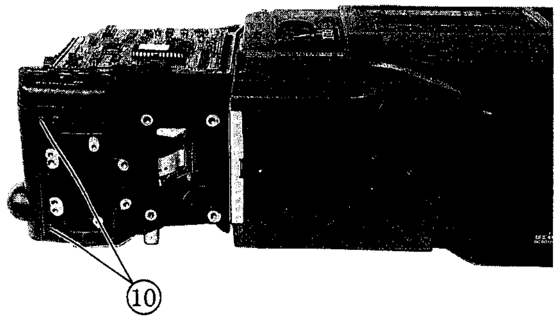


Fig. 1-7

7. Pull out the optical block frontwards together with the front panel Ⓛ.
   (The optical block is connected with the MT board by the board connector Ⓜ .)

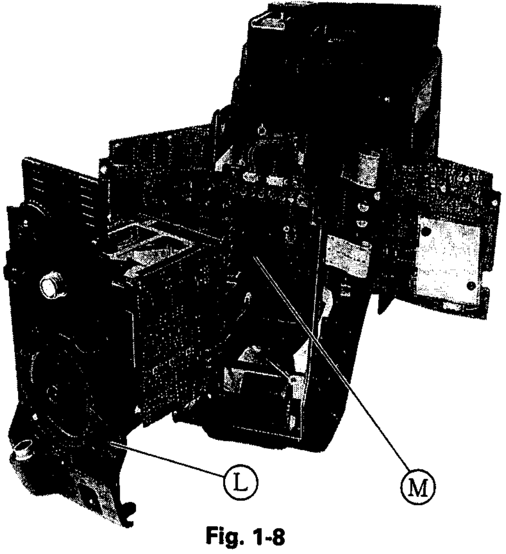


Fig. 1-8

8. Connection between the optical block (PR board) and the MT board is extendable with the extension cable (Part No. SCM0732).

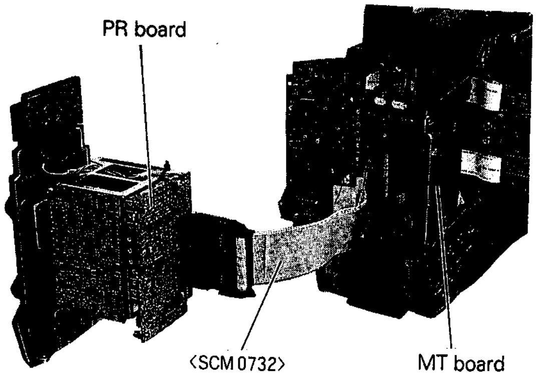


Fig. 1-9

Note: When reassembling the optical block, make sure of tight connection of the board connector Ⓜ with the MT board.

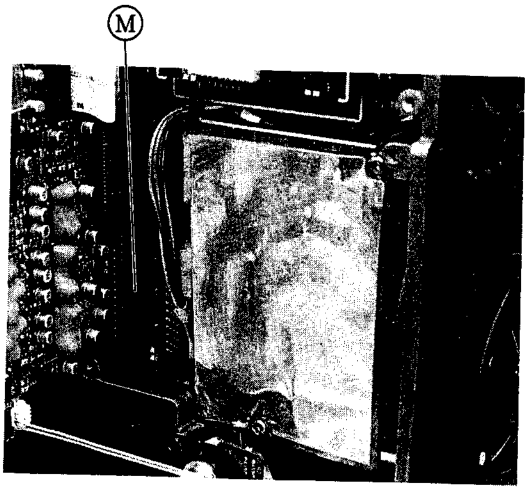


Fig. 1-10

1.5 REMOVAL OF OPTICAL FILTER ASSEMBLY

1. Remove the optical block assembly referring to the previous section 1.4.
2. Remove four screws ⑪ from the front frame.
3. Remove two hexagon head screws ⑫ from the filter knob Ⓝ and detach the filter knob.

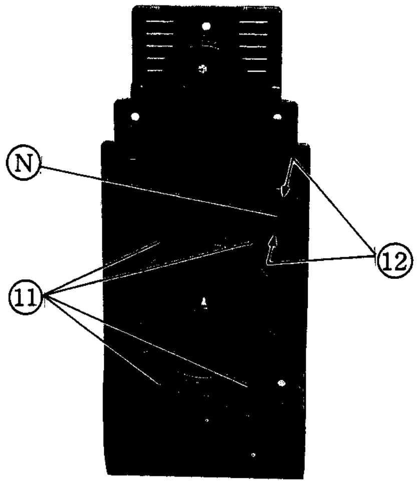


Fig. 1-11

4. Adjust the lens mount ring to position its knob Ⓞ as shown in the following picture (Fig. 1-12) and detach the portion Ⓟ of the front panel from the optical block assembly.
5. Slide the front panel Ⓛ by the lower part in ;the direction of the arrow and remove the front panel.

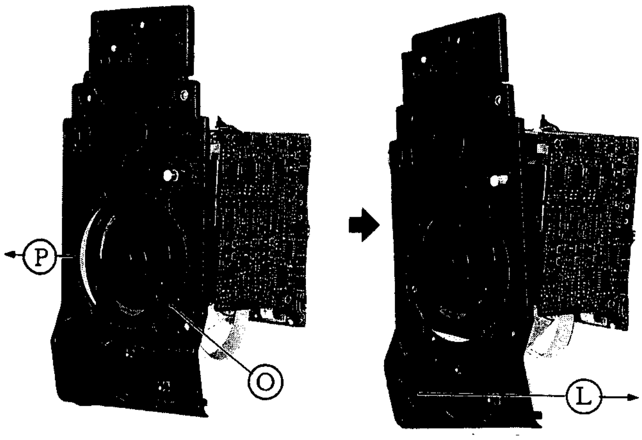


Fig. 1-12 Fig. 1-13

6. Remove two screws ⑬ and detach the optical filter assembly.

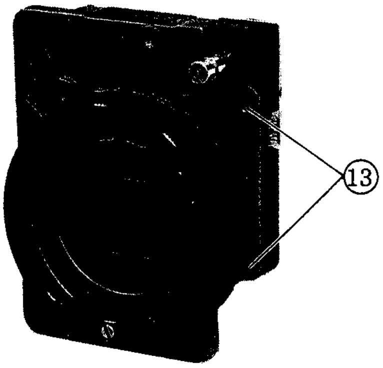


Fig. 1-14

1.6 REPLACEMENT OF CCD BLOCK

Note: If there is anything wrong in the CCD, it cannot be replaced alone since it is precisely glued to the prism.
In such a case, replace the CCD block as a whole.

1. Remove three screws ⑭ and detach the DR, PA and PR boards together with the frame Ⓠ.
2. Take off the front panel Ⓛ referring to the previous section 1.5.
3. Remove the optical filter assembly referring to the previous section.

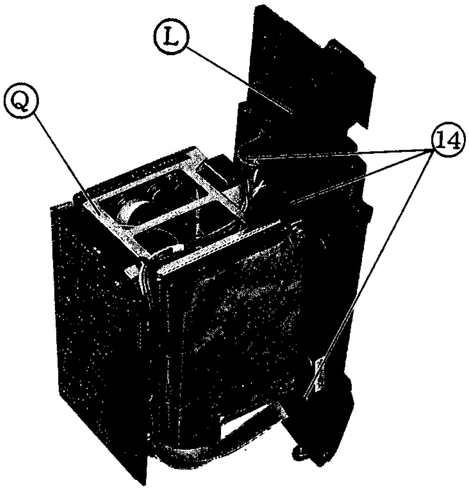


Fig. 1-15

Note: CCD blocks that are supplied as repair parts have not the front panel, DR, PA and PR boards at all.
When replacing the CCD block, fit it with the DR, PA and PR boards before assembling to the camera section.

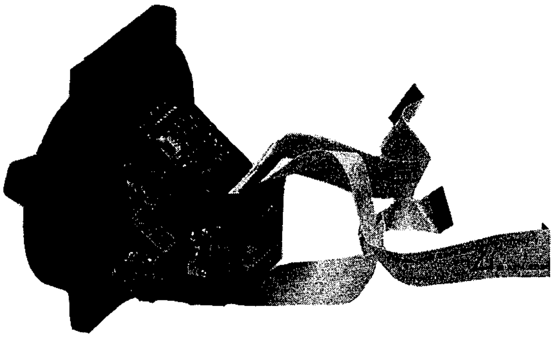
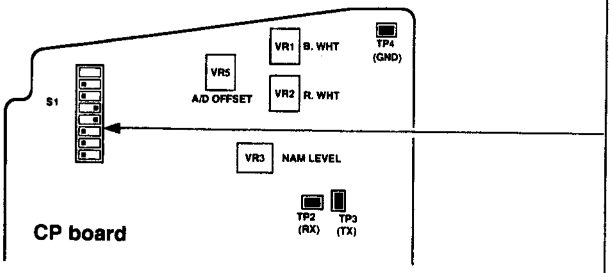


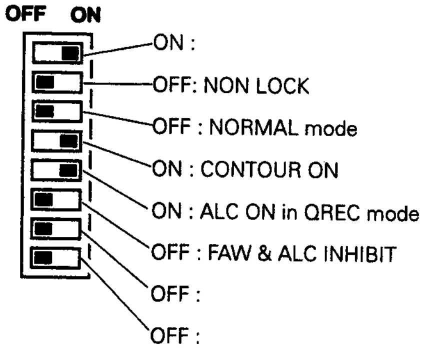
Fig. 1-16

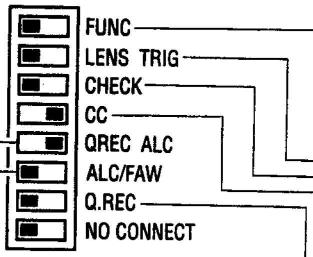
1.7 FUNCTIONS OF CAMERA'S INTERNAL SWITCHES

Respective functions of internal switches of the camera are as follows.

1.7.1 Switches on CP board



Symbol No.	Switch Name	Initial Setting at Shipment
S1 [CP board]	MODE SELECT & CHECK switch	 OFF ON ON : OFF: NON LOCK OFF : NORMAL mode ON : CONTOUR ON ON : ALC ON in QREC mode OFF : FAW & ALC INHIBIT OFF : OFF :



① FUNCTION SELECT switch (U version only)
To change GAIN, V. SCVAN and ALC function modes.

Setting position	ON	OFF
GAIN setting	0 (•), +9 (••), +18 (•••) dB	0 (•), 6 (••), +9 (•••) dB
V. scan rate	*1/60.2 to 1/2084.6	*1/60 to 1/249.8
ALL range	0 to +18 dB	0 to +12 dB

This switch comes into effect only in the U-version. In the E-version, selection for respective modes are limited as shown in this box regardless of set positions of this switch. (In the E-version, V. scan rate is from 1/50.2 to 1953.1.)

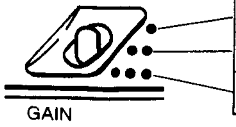
② LENS TRIGGER SELECT switch
To set to ON or OFF according to the type of the VTR trigger button of the lens to be mounted on the camera.
ON : For the alternate type (lock type) trigger button
OFF : For the momentary type (on only during pressed) trigger button

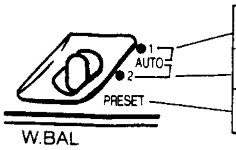
③ CHECK MODE ON/OFF switch
To turn on/off the check mode of the CPU for convenience of servicing. For detail of the check mode, refer to the section 2 "Electrical Adjustment".

④ CONTOUR CORRECTION ON/OFF or BLACK ADJUST MODE ON/OFF switch
ON : CONTOUR ON
OFF : CONTOUR OFF

⑤ QREC ALC switch
To select ALC (Auto video Level Control) in the QREC mode.
ON : ALC is activated in the QREC mode regardless of setting position of the GAIN switch.
OFF : ALC is inactivated and gain in the QREC mode depends on setting of the GAIN switch.

⑥ ALC/FAW switch
To switch between ALC (Auto video Level Control) and FAW (Full time Auto White) functions. Depending on setting of this switch, functions of the GAIN switch and the W. BAL switch vary as shown below.





Setting of ALC/FAW switch	
ON	OFF
0 dB	0 dB
+6 or +9 dB	+6 or +9 dB
ALC	+9 dB or +18 dB
AUTO 1	AUTO 1
FAW	AUTO 2
PRESET	PRESET

⑦ QUICK REC STAND-BY ON/OFF switch
ON : QREC mode ON
OFF : QREC mode OFF

Note:

- TheCPU reads setting states of the switches other than the CHICK MODE ON/OFF switch 3 and the CONTOUR CORRECTION ON/OFF switch 4 only when the power switch is turned on. If those switches are otherwise set as the power is on, make sure to turn the power off once and again on.
- Differently from the ALC of the GY-X1 and KY-27 in its operational principle, the fALC of the GY-X3 adjusts sensitivity utilizing the electronic shutter together with in the sensitized mode. Accordingly, speed setting of the electronic shutter is ineffectual in the sensitized mode and flickering may occur under some lighting conditions. Please give a detailed explanation about this function and possible phenomenon to users.

1.7.2 CPU (IC1) I/O PORT ALLOTMENT

1. Ports connected with A/D converter

Input of analaog voltage to these ports are converted into digital value, which is supplied to the processing unit.

Pin No.	Port No.	I/O	Function	Remarks
14	AN0	I	B, G, R, B-G, R-G video level detection	IC15 is switched every 1 vertical period to input video signals on respective channels. • In Auto White operation : B-G, R-G signals • In Auto Black operation : B, G, R signals • In Check mode : B-G, R-G, B, G, R, G-G signals
15	AN1	I	NAM VIDEO (APL) detection	Input of mean value that NAM (No Additive Mixed B, G and R) signal is weighted in the multi-zone.
16	AN2	I	NAM VIDEO (PEAK) detection	Input of the peak value of the above signal.
17	AN3	I	Filter position detection	Input of voltage to express setting position of the optical filter. • 0 V : 3200 K • 1.18 V : 5600 K • 3.70 V : 5600 K + ND
18	AN4	I	Audio level detection	Detection of audio level to display in the viewfinder.
19	AN5	I	Power voltage detection	Detection of supply voltage to display in the viewfinder. • Display voltage = 0.3 V + Input voltage × 10
20	AN6	I	GAIN SW position detection	Input of voltage to express switch setting position. • 0 V : • • 2.5 V : •• • 5 V : •••
21	AN7	I	Iris position detection	Detection of lens iris ring setting position.

2. Parallel input/output ports

<table>
<tr><th>Pin No.</th><th>Port No.</th><th>I/O</th><th>Function</th><th>Remarks</th></tr>
<tr><td>6
9
10
51</td><td>P53
P56
P57
P34</td><td>O
I
I
I</td><td>For input of setting data of CHECK SW (S1).
P53 changes over multiplexer IC40 to input setting data of six switches through these three ports.</td><td><table><tr><td>P53 output</td><td>H</td><td>L</td></tr><tr><td>P34 input</td><td>FUNCTION SELECT setting</td><td>LENS TRIGGER setting</td></tr><tr><td>Pin 56 input</td><td>CHECK MODE ON/OFF</td><td>CONTOUR/BLACK setting</td></tr><tr><td>Pin 57 input</td><td>QREC ALC SW setting</td><td>ALC/FAW SW setting</td></tr></table>For switch functions, refer to the section 1. "Service Cautions and Disassembly".</td></tr>
<tr><td>47
48
49
50</td><td>P30
P31
P32
P33</td><td>O
O
O
O</td><td>CHIP SELECT signal
CHIP SELECT signal
CHIP SELECT signal
ENABLE signal</td><td>This CPU outputs serial data to control camera sections from pin 4 "SO" while it inputs data for detecting status of camera sections through pin 3 "SI". Lines to pins 4 and 3, "SO" and "SI", are connected with multiple ICs to comprise bus lines. This CPU exchanges data with those ICs without fail since it, owing to the function of IC28, selects only one IC at a time to transmit/receive data timely with its opeation. For sequential selection of ICs, 4-bit data outputs of P30 through P33 are used.</td></tr>
</table>

(Continued on the next page)

<table>
<tr><th>Pin No.</th><th>Port No.</th><th>I/O</th><th>Function</th><th>Remarks</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th>P33</th><th>P32</th><th>P31</th><th>P30</th><th>Line selected by IC28</th><th>Description</th></tr>
<tr><td>L</td><td>X</td><td>X</td><td>X</td><td>X</td><td>None of P32, P31, P33 selected</td></tr>
<tr><td>H</td><td>L</td><td>L</td><td>L</td><td>Y0</td><td>IC8 (buffer) selected. Accordingly, setting modes of switches inside and outside camera are read in. Moreover, communication line with VTR is connected.</td></tr>
<tr><td>H</td><td>L</td><td>L</td><td>H</td><td>Y1</td><td>IC30 (serial-parallel data converter) selected.
ON/OFF control signal is output for camera sections.</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>L</td><td>Y2</td><td>Not used</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>H</td><td>Y3</td><td>IC12 (E^2PROM) selected.</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>L</td><td>Y4</td><td>IC13 (D-A converter) selected. Analog voltage for lens iris control, white balance control amp, etc. is output.</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>H</td><td>Y5</td><td>IC7 (character generator) selected</td></tr>
<tr><td>H</td><td>H</td><td>H</td><td>L</td><td>Y6</td><td>IC9 (area gate generator) selected</td></tr>
<tr><td>H</td><td>H</td><td>H</td><td>H</td><td>Y7</td><td>IC34 (buffer) selected</td></tr>
</table>
</td></tr>
<tr><td>52</td><td>P40</td><td>I</td><td>SHUTTER ON/OFF detection</td><td>"L": Active</td></tr>
<tr><td>56</td><td>P44</td><td>I</td><td>"IRIS UNDER" detection</td><td>Detection of IRIS OVER/NORM/UNDER switch setting</td></tr>
<tr><td>57</td><td>P45</td><td>I</td><td>"IRIS OVER" detection</td><td>Detection of IRIS OVER/NORM/UNDER switch setting</td></tr>
<tr><td>59</td><td>P46</td><td>I</td><td>LOLUX SW setting detection</td><td>"L": Active</td></tr>
<tr><td>63</td><td>P72</td><td>I</td><td>SHUTTER SELECT detection</td><td>"L": Active</td></tr>
<tr><td>53</td><td>P41</td><td>O</td><td>GAIN CTL latch</td><td>Controls to output control signal to the gain control amp (0 dB ↔+18 dB) timely with V. blanking in order to up-gain switching in V. blanking period.</td></tr>
<tr><td>54
55</td><td>P42
P43</td><td>O
O</td><td>SHUTTER CTL data
SHUTTER clock</td><td>Serial data output for shutter speed setting.
Clock pulse output for reading the above serial data by shutter controller.</td></tr>
<tr><td>60</td><td>P47</td><td>O</td><td>RESET INTEGRATION</td><td>Turns on IC23 to reset video level detection circuit and NAM signal level detection integral circuit.</td></tr>
<tr><td>61</td><td>P70</td><td>O</td><td>B/R SELECT</td><td rowspan="2">With IC15, this switches B,/R/G channel signals every 1V in the white balance/black balance detection circuit.</td></tr>
<tr><td>62</td><td>P71</td><td>O</td><td>(B/R)/G SELECT</td></tr>
<tr><td>64</td><td>P73</td><td>O</td><td>–G MIX ON/OFF</td><td>Selects mixing of –G(inverted G) signal into the above (P70, P71) signal or not.</td></tr>
</table>

1.8 FUNCTION OF INTERNAL SWITCHES ON SE BOARD

Respective functions of the internal switches on the board as follows.

1.8.1 S2

Function : To switch zebra pattern indication standard

85 — 95 : Zebra pattern indicates the part of picture whose video level is 85 to 95 IRE. (Initial setting at shipment)

95 — : Zebra pattern indicates the part of picture whose video level is higher than 95 IRE.

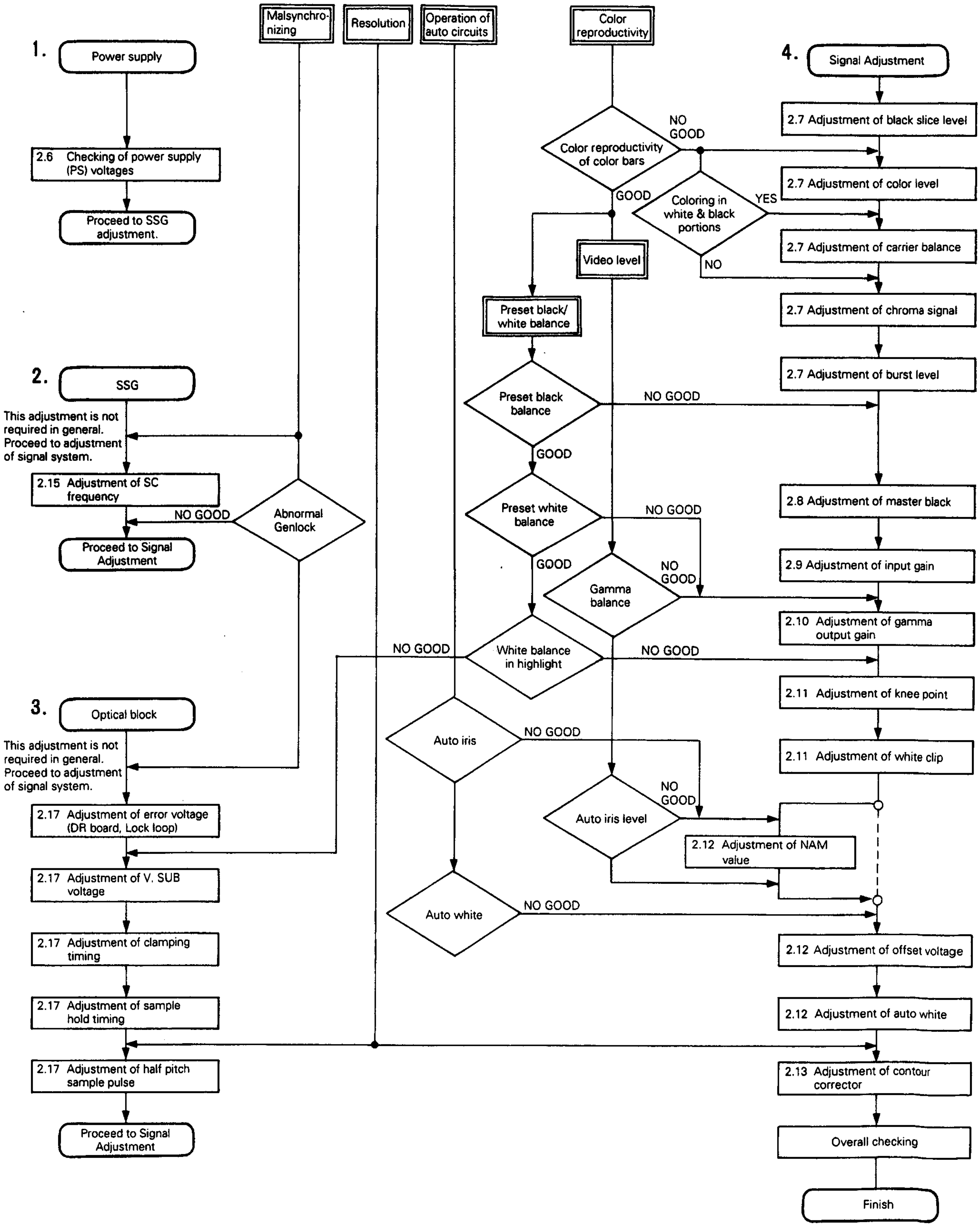
1.9 SYSTEM RESET

Depress the SPEED button and the LOLUX button together with while turning on the POWER SWITCHF, and the camera is reset as mentioned below.

Item	Reset status
Shutter speed	1/100 (NTSC) or 1/120 (PAL)
LOLUX mode	OFF
Status indication	Status "0"
Safety zone	No indication
V. scan	60.0 (NTSC) or 50.0 (PAL)

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 FLOWCHART OF ELECTRICAL ADJUSTMENTS



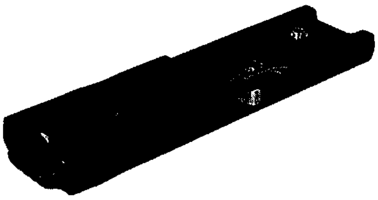
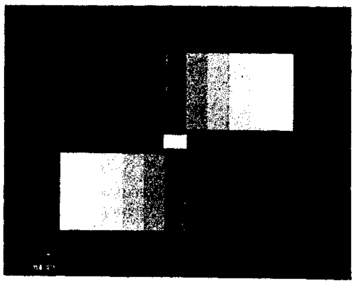
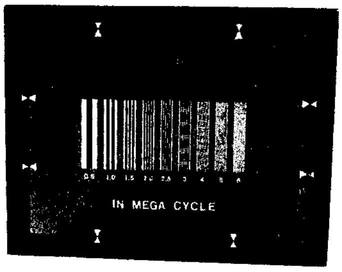
Malsynchro-nizing
Resolution
Operation of auto circuits
Color reproductivity
1. Power supply
2.6 Checking of power supply (PS) voltages
Proceed to SSG adjustment.
2. SSG
This adjustment is not required in general. Proceed to adjustment of signal system.
2.15 Adjustment of SC frequency
NO GOOD
Abnormal Genlock
Proceed to Signal Adjustment
3. Optical block
This adjustment is not required in general. Proceed to adjustment of signal system.
2.17 Adjustment of error voltage (DR board, Lock loop)
2.17 Adjustment of V. SUB voltage
2.17 Adjustment of clamping timing
2.17 Adjustment of sample hold timing
2.17 Adjustment of half pitch sample pulse
Proceed to Signal Adjustment
Color reproductivity of color bars
NO GOOD
GOOD
Coloring in white & black portions
YES
NO
Video level
Preset black/ white balance
Preset black balance
NO GOOD
GOOD
Preset white balance
NO GOOD
GOOD
Gamma balance
NO GOOD
White balance in highlight
NO GOOD
NO GOOD
Auto iris
NO GOOD
Auto iris level
NO GOOD
Auto white
NO GOOD
4. Signal Adjustment
2.7 Adjustment of black slice level
2.7 Adjustment of color level
2.7 Adjustment of carrier balance
2.7 Adjustment of chroma signal
2.7 Adjustment of burst level
2.8 Adjustment of master black
2.9 Adjustment of input gain
2.10 Adjustment of gamma output gain
2.11 Adjustment of knee point
2.11 Adjustment of white clip
2.12 Adjustment of NAM value
2.12 Adjustment of offset voltage
2.12 Adjustment of auto white
2.13 Adjustment of contour corrector
Overall checking
Finish

2.2 REQUIRED EQUIPMENT AND STANDARD SETUP FOR ELECTRICAL ADJUSTMENT

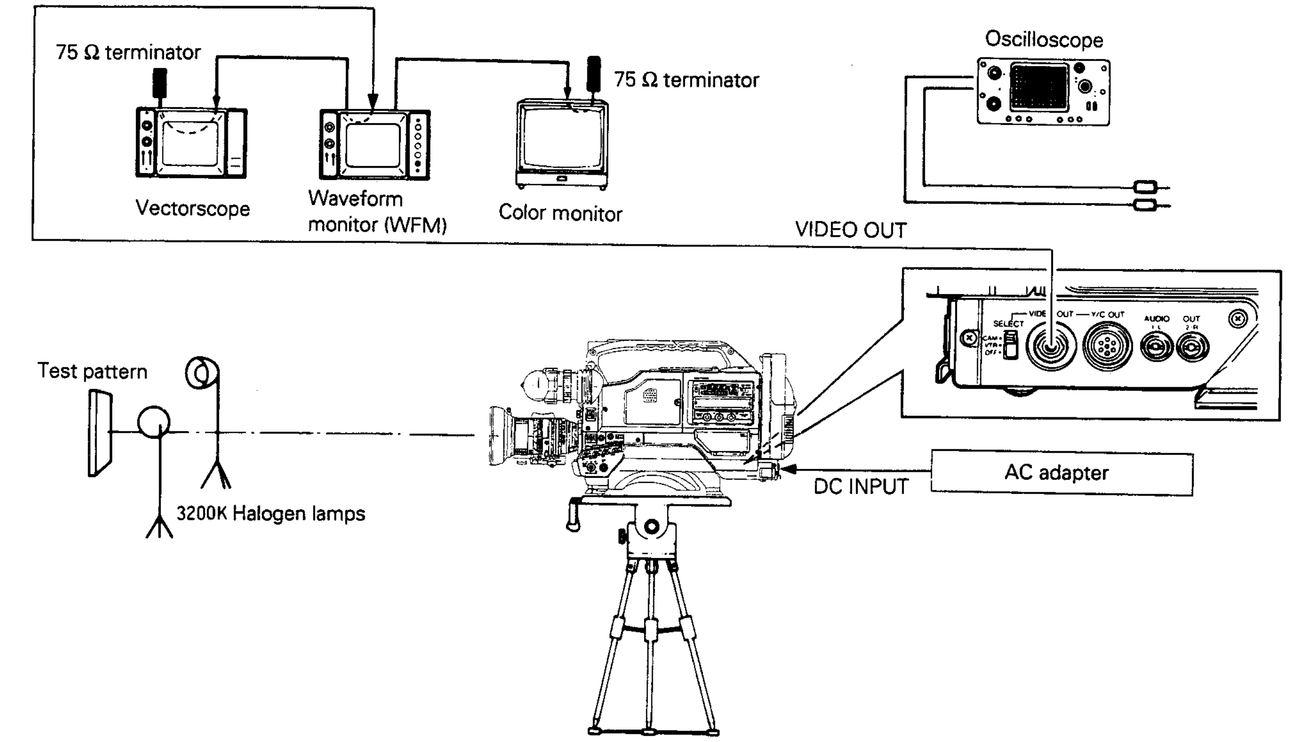
2.2.1 Necessary instruments

1. Lighting apparatus (3200 K halogen lamps)
2. DC voltmeter (digital voltmeter is preferable)
3. Oscilloscope (dual trace type is preferable)
4. Frequency counter
5. Color TV monitor
6. Waveform monitor
7. Vectorscope
8. 12 V DC power supply (AC power adapter AA-P250)
9. Camera lens : YH13X7.5K12
10. Viewfinder (VF-P115)

3.2.2 Special implements for electrical adjustments

1	Tripod base	2	Gray scale chart	3	In-megacycle chart
< KA-510, attachment >		< Part No. GS2L >		< Part No. RESC-010 >	
					

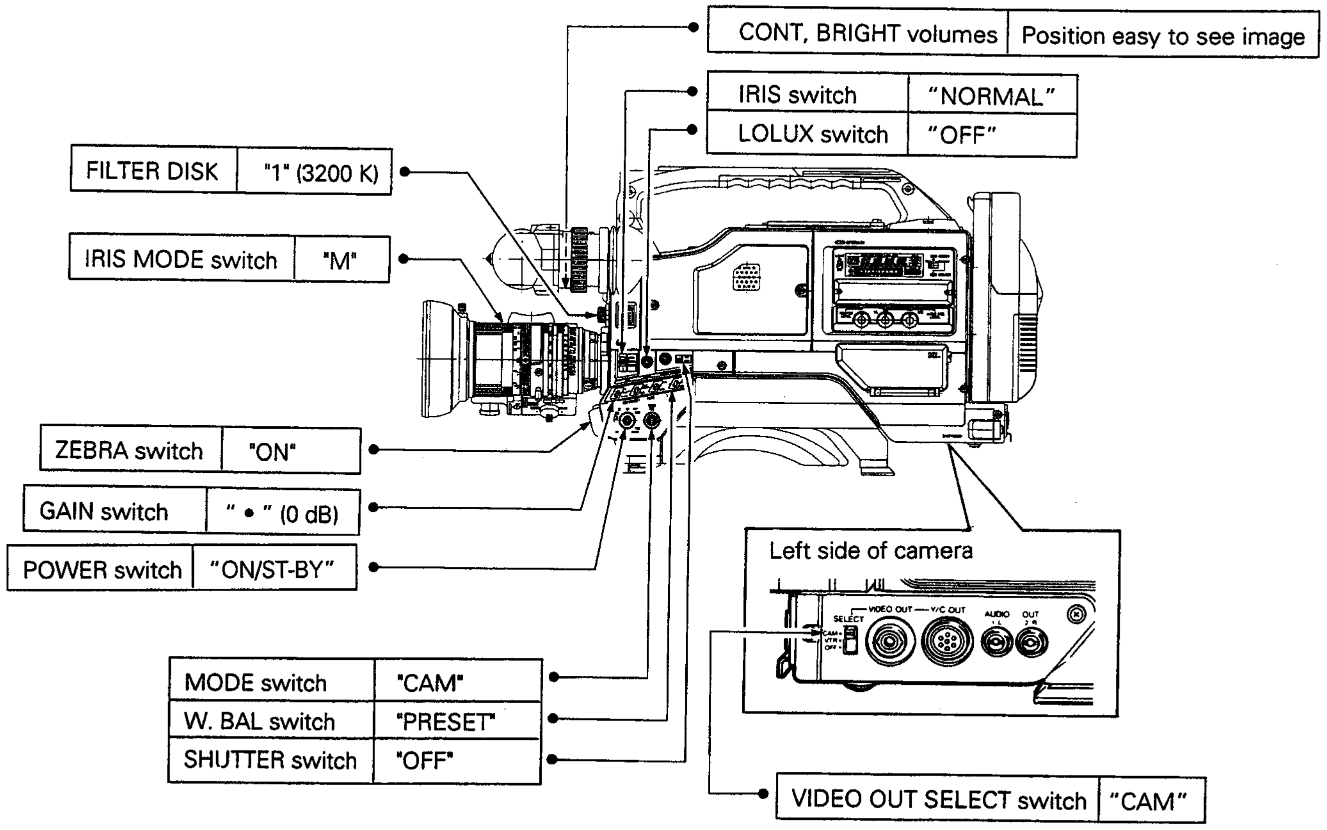
2.2.3 Standard setup


75 Ω terminator
75 Ω terminator
Oscilloscope
Vectorscope
Waveform monitor (WFM)
Color monitor
VIDEO OUT
Test pattern
3200K Halogen lamps
DC INPUT
AC adapter

2.2.4 Standard setting of switches

Siwtches that need to reset for adjustment are shown below.

For adjustments described in this section, set these switches as follows unless otherwise indicated in the adjustment procedures.



CONT, BRIGHT volumes	Position easy to see image
IRIS switch	"NORMAL"
LOLUX switch	"OFF"
FILTER DISK	"1" (3200 K)
IRIS MODE switch	"M"
ZEBRA switch	"ON"
GAIN switch	" • " (0 dB)
POWER switch	"ON/ST-BY"
MODE switch	"CAM"
W. BAL switch	"PRESET"
SHUTTER switch	"OFF"
VIDEO OUT SELECT switch	"CAM"

Left side of camera

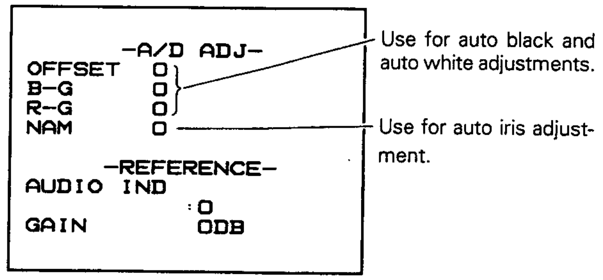
2.3 BEFORE PROCEEDING TO ADJUSTMENT

2.3.1 Check mode

The CPU of this camera has a servicing mode which is convenient for electrical adjustments. This mode is called the Check Mode of the CPU.

- **Procedure to activate check mode**

Set S1-3 of the CHECK switch on the CP1 board to "ON", and the check mode is activated with display of the adjustment menu in the viewfinder.



```
       -A/D ADJ-
OFFSET    0
B-G       0
R-G       0
NAM       0

     -REFERENCE-
AUDIO IND
             :0
GAIN          0DB
```

Use for auto black and auto white adjustments.

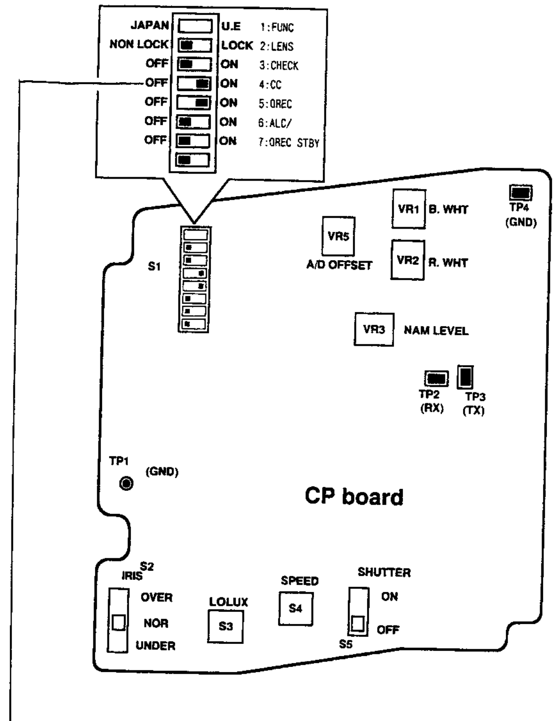
Use for auto iris adjustment.

- Adjustment menu on Viewfinder -

- **Camera status in check mode**

During the check mode, respective parts of camera is in the following status.

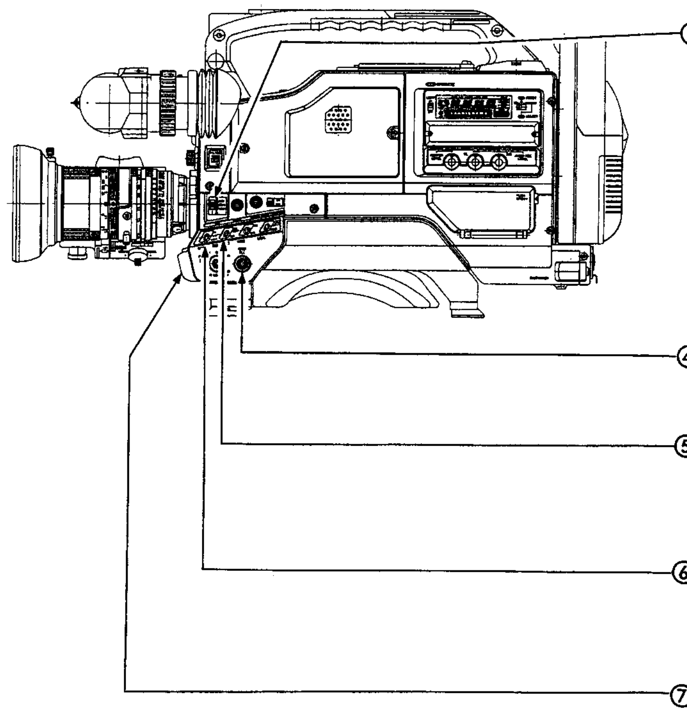
① Contour is automatically turned off during the check mode.


JAPAN
U.E
1:FUNC
NON LOCK
LOCK
2:LENS
OFF
ON
3:CHECK
OFF
ON
4:CC
OFF
ON
5:QREC
OFF
ON
6:ALC/
OFF
ON
7:QREC STBY
S1
VR5
A/D OFFSET
VR1
B. WHT
VR2
R. WHT
TP4
(GND)
VR3
NAM LEVEL
TP2
(RX)
TP3
(TX)
TP1
(GND)
CP board
S2
IRIS
OVER
NOR
UNDER
LOLUX
S3
SPEED
S4
SHUTTER
ON
OFF
S5

② Function of the CONTOUR ON/OFF switch (S1-4 on the CP board) changes.
During the check mode, this switch functions as the ON/OFF switch of black adjustment mode.

ON : Black adjustment mode
Black slice is inactivated and the black level increases.

OFF: Normal check mode



③ AUTO IRIS MODE : Regardless of setting position of the IRIS MODE switch, camera enters the "NORMAL" mode.

④ QUICK REC SWITCH : Pressing this switch does not start QUICK RECORDING.

⑤ DISP SELECT : Display in the viewfinder is the check mode menu which cannot be replaced by pressing this switch.

⑥ GAIN switch : Setting positions of this switch correspond to " • " (0 dB), " •• " (+9 dB) and " ••• " (+18 dB) respectively.

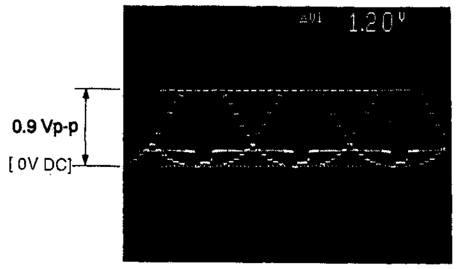
⑦ AUTO switch : During the check mode, neither auto white adjustment nor auto black adjustment is activated by this switch.

2.4 VIDEO CIRCUIT BLOCK DIAGRAM

Note:

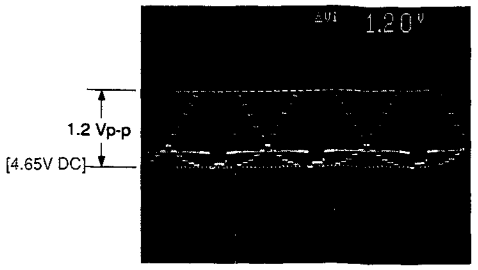
Waveforms and levels shown in the following diagrams are measured with illumination whose color temperature is 3200K.
Voltages shown in blue square brackets [ ] are just for reference, and actually measured values slightly vary depending on camera.

B. G. R Signal
of GRAY SCALE



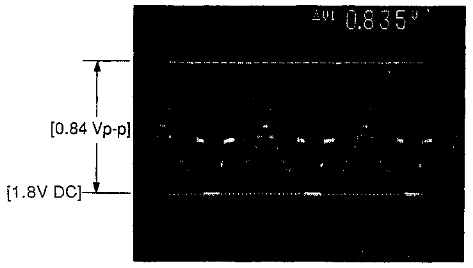
H-rate

B. G. R Signal
of GRAY SCALE



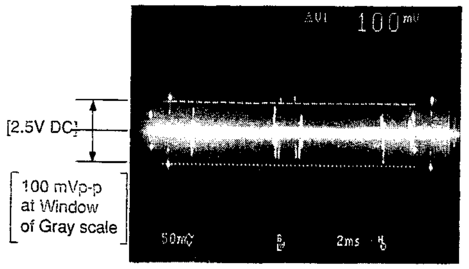
H-rate

B. G. R Signal
of GRAY SCALE

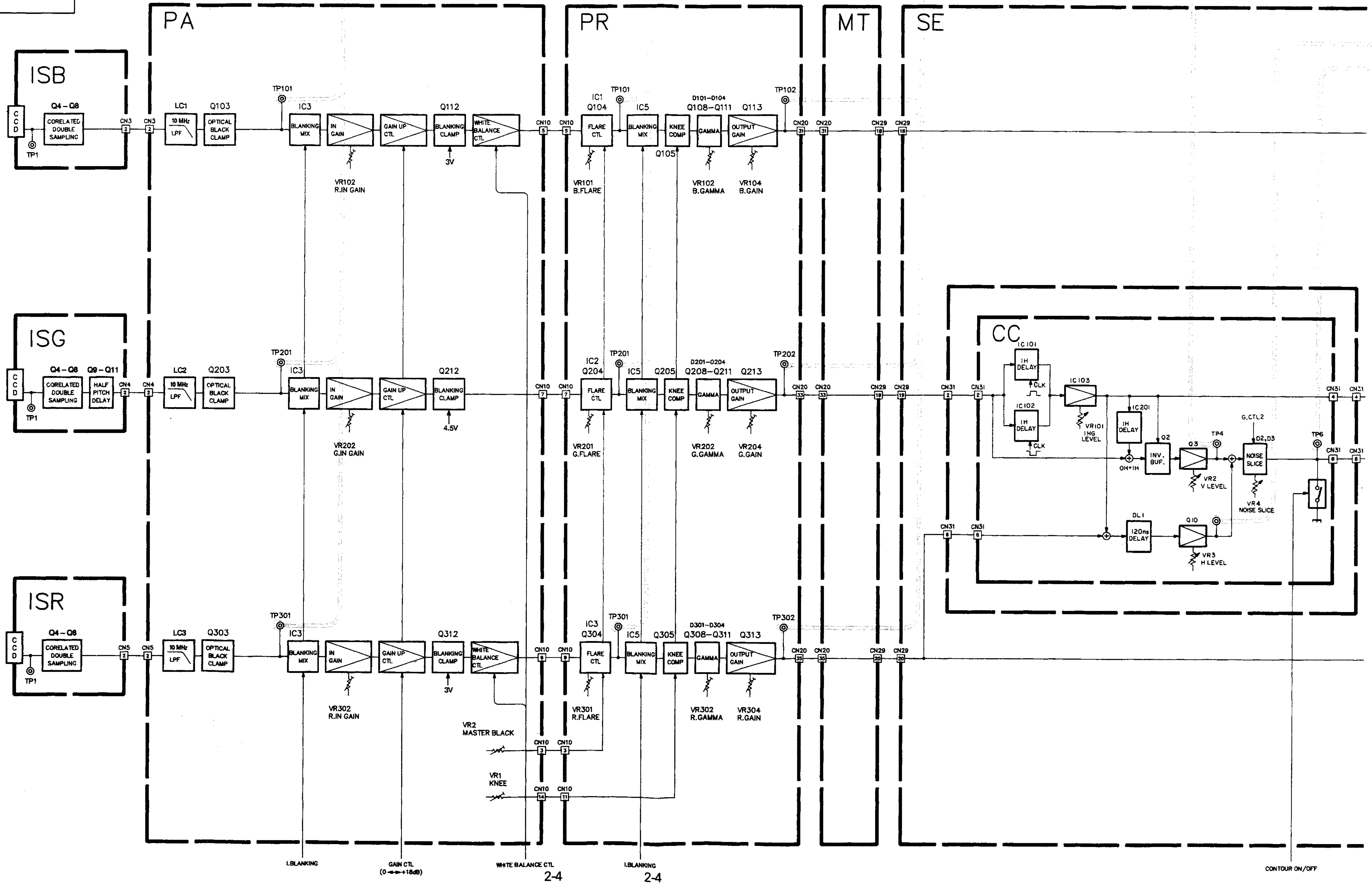


H-rate

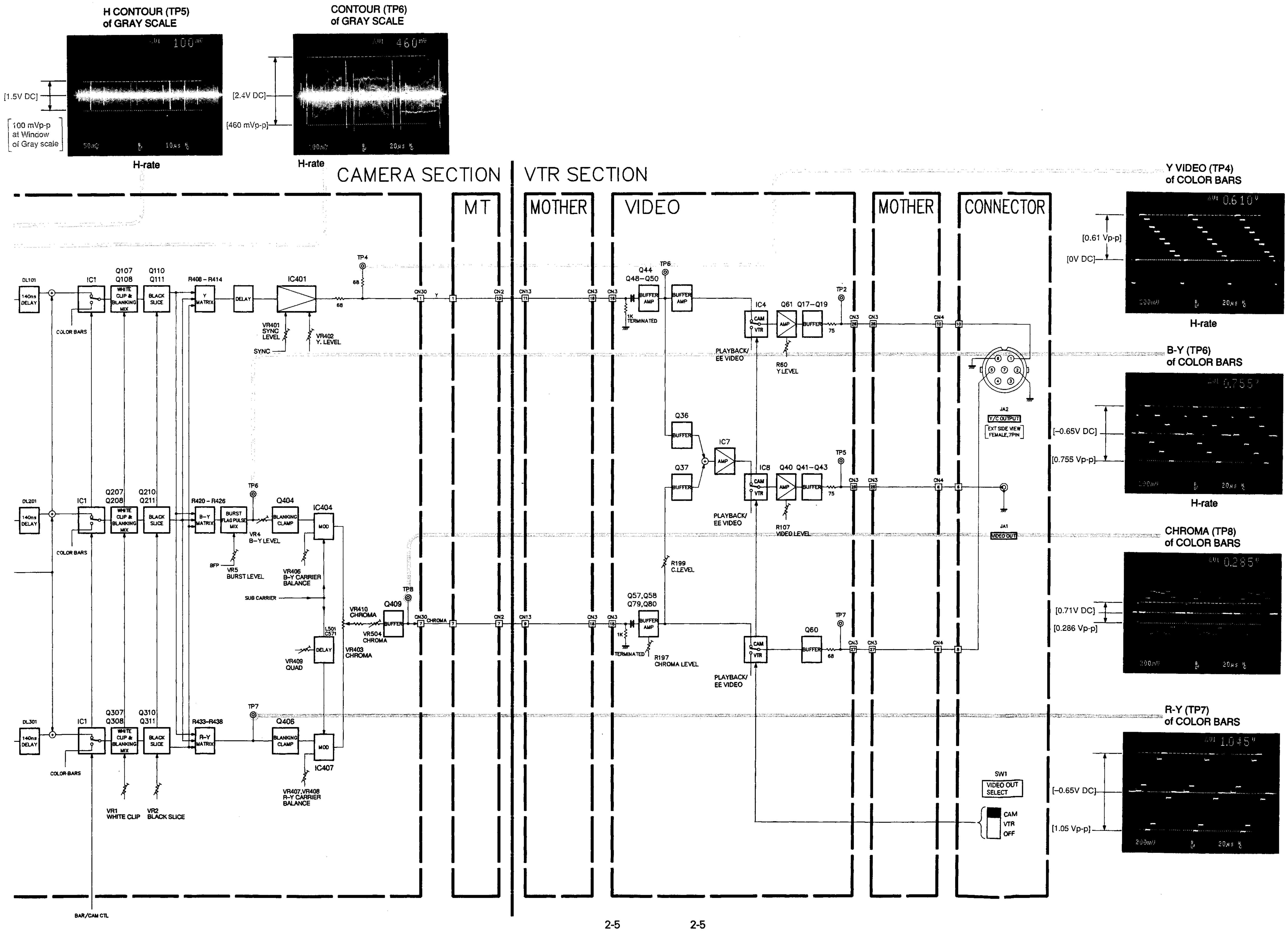
V CONTOUR (TP4)
of GRAY SCALE



V-rate

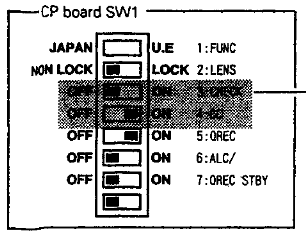


PA
PR
MT
SE
ISB
ISG
ISR
CCD
TP1
Q4-Q8
CORELATED DOUBLE SAMPLING
Q9-Q11
HALF PITCH DELAY
CN3
CN4
CN5
LC1
LC2
LC3
10 MHz LPF
Q103
Q203
Q303
OPTICAL BLACK CLAMP
TP101
TP201
TP301
IC3
BLANKING MIX
IN GAIN
GAIN UP CTL
Q112
Q212
Q312
BLANKING CLAMP
3V
4.5V
WHITE BALANCE CTL
VR102 R.IN GAIN
VR202 G.IN GAIN
VR302 R.IN GAIN
CN10
IC1 Q104
IC2 Q204
IC3 Q304
FLARE CTL
IC5
Q105
Q205
Q305
KNEE COMP
D101-D104 Q108-Q111
D201-D204 Q208-Q211
D301-D304 Q308-Q311
GAMMA
Q113
Q213
Q313
OUTPUT GAIN
TP102
TP202
TP302
VR101 B.FLARE
VR102 B.GAMMA
VR104 B.GAIN
VR201 G.FLARE
VR202 G.GAMMA
VR204 G.GAIN
VR301 R.FLARE
VR302 R.GAMMA
VR304 R.GAIN
VR2 MASTER BLACK
VR1 KNEE
CN20
CN29
CN31
CC
IC101
IC102
1H DELAY
CLK
IC103
VR101 1HG LEVEL
IC201
1H DELAY
0H+1H
Q2
INV. BUF.
Q3
TP4
VR2 V LEVEL
G.CTL2
D2,D3
NOISE SLICE
VR4 NOISE SLICE
TP6
DL1
120ns DELAY
Q10
VR3 H LEVEL
I.BLANKING
GAIN CTL (0 ↔ +18dB)
WHITE BALANCE CTL
I.BLANKING
CONTOUR ON/OFF

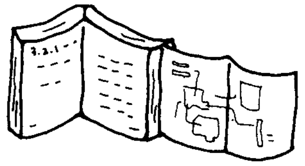

H CONTOUR (TP5)
of GRAY SCALE
[1.5V DC]
100 mVp-p at Window of Gray scale
H-rate
CONTOUR (TP6)
of GRAY SCALE
[2.4V DC]
[460 mVp-p]
H-rate
CAMERA SECTION
VTR SECTION
MT
MOTHER
VIDEO
MOTHER
CONNECTOR
Y VIDEO (TP4)
of COLOR BARS
[0.61 Vp-p]
[0V DC]
H-rate
B-Y (TP6)
of COLOR BARS
[-0.65V DC]
[0.755 Vp-p]
H-rate
CHROMA (TP8)
of COLOR BARS
[0.71V DC]
[0.286 Vp-p]
R-Y (TP7)
of COLOR BARS
[-0.65V DC]
[1.05 Vp-p]
DL101
140ns DELAY
IC1
COLOR BARS
Q107 Q108
WHITE CLIP & BLANKING MIX
Q110 Q111
BLACK SLICE
R408 – R414
Y MATRIX
DELAY
IC401
TP4
68
VR401 SYNC LEVEL
VR402 Y. LEVEL
SYNC
CN30
Y
CN2
CN13
CN3
Q44
Q48–Q50
TP6
BUFFER AMP
1K TERMINATED
IC4
CAM
VTR
Q61
AMP
Q17–Q19
BUFFER
TP2
75
CN4
PLAYBACK/ EE VIDEO
R60 Y LEVEL
JA2
Y/C OUTPUT
EXT SIDE VIEW FEMALE,7PIN
DL201
Q207 Q208
Q210 Q211
R420 – R426
B-Y MATRIX
TP6
BURST FLAG PULSE MIX
Q404
BLANKING CLAMP
IC404
MOD
VR4 B-Y LEVEL
BFP
VR5 BURST LEVEL
VR406 B-Y CARRIER BALANCE
SUB CARRIER
Q36
IC7
Q37
IC8
Q40
Q41–Q43
TP5
R107 VIDEO LEVEL
JA1
VIDEO OUT
R199 C.LEVEL
TP8
VR410 CHROMA
Q409
VR504 CHROMA
L501 C571
VR409 QUAD
VR403 CHROMA
CHROMA
Q57,Q58
Q79,Q80
R197 CHROMA LEVEL
Q60
TP7
68
DL301
Q307 Q308
Q310 Q311
R433–R438
R-Y MATRIX
Q406
IC407
VR407,VR408 R-Y CARRIER BALANCE
VR1 WHITE CLIP
VR2 BLACK SLICE
BAR/CAM CTL
SW1
VIDEO OUT SELECT
CAM
VTR
OFF

2.5 TABLE OF MEASURING POINTS, ADJUSTMENT PARTS AND ADJUSTMENT LEVELS OF VIDEO SYSTEM

	Item		Setting of Switches, etc.	GAIN SW	CHECK SW CC SW	Measuring Points ◎	Adjustment Parts ⦶	Adjustment Levels ☆	Reference section (Page)
COLOR ENCODER	• Black slice level		• MODE switch → BARS	●	CHECK OFF ON CC	SE ◎ TP2	SE ⦶ VR2, BLACK SLICE	Blanking level and pedestal level are equal to each other.	2.7-2 (p. 2-7)
	• Y. SYNC SETUP					VIDEO OUT	SE ⦶ VR402, Y LEVEL ⦶ VR401, SYNC LEVEL	NTSC / PAL Y 0.55V / 0.7V SYNC 0.286V / 0.3V SET UP 53mV / —	2.7-3 (p. 2-8)
	• Carrier balance						SE ⦶ VR406, B-Y C BAL ⦶ VR407, R-Y C BAL1 ⦶ VR408, R-Y C BAL2	Min. carrier leak in white and black portions	2.7-4 (p. 2-8)
	• Chroma level color vector						SE ⦶ VR403, B-Y LEVEL ⦶ VR409, QUAD ⦶ VR410, CHROMA LEVEL	Every dot positions in the ± mark.	2.7-5 (p. 2-9)
	• Burst level						SE ⦶ VR405, BURST LEVEL	0.286 Vp-p [NTSC] 0.3 Vp-p [PAL]	2.7-6 (p. 2-9)
BLACK	• Master black			●	CHECK ON ON CC	PR ◎ TP202	PA ⦶ VR2, MASTER BLACK	Center of black carrier accords with blanking level.	2.12-2 (p. 2-12)
VIDEO PROCESS	• Standard iris setting		• MODE switch → CAM	●		PA ◎ TP201	Lens iris	**0.9 Vp-p (white peak)**	2.9-1 (p. 2-13)
	• Input gain		• IRIS → MANU • Gray scale chart • W. BAL → PRESET • Iris setting:		CHECK OFF OFF CC	PR ◎ TP101 ◎ TP201 ◎ TP301	PA ⦶ VR102, B IN GAIN ⦶ VR202, G IN GAIN ⦶ VR302, R IN GAIN	1.2 Vp-p (white peak)	2.9-2 (p. 2-13)
	• Video level	G				PR ◎ TP202 CC ◎ TP2	PR2 ⦶ VR1, 1H G LEVEL	Levels of the two test points are the same.	2.10-2 (p. 2-14)
						SE ◎ TP2	PR ⦶ VR204, G OUT GAIN ⦶ VR202, G GAMMA	1.2 Vp-p (white peak) Stairstep wave of gray scale waveform is aligned straight.	
		B/R				VIDEO OUT	PR ⦶ VR104, B OUT GAIN ⦶ VR304, R OUT GAIN	Minimum carrier leak at white peak (0.714 Vp-p [NTSC] 0.7 Vp-p [PAL])	2.10-3 (p. 2-15)
							PR ⦶ VR102, B GAMMA ⦶ VR302, R GAMMA	Minimum carrier leak at cross point (0.41 Vp-p [NTSC] 0.39 Vp-p [PAL])	
	• Flare						PR ⦶ VR301, R FLARE	Volume setting at the graduations' 2nd clockwise position from the full counterclockwise position.	2.10-4 (p. 2-15)
							⦶ VR101, B FLARE ⦶ VR201, G FLARE	Minimum carrier leak at dark portion.	
	• Knee point						PA ⦶ VR1, KNEE	0.714 V (knee point) [NTSC] 0.7 V (knee point) [PAL]	2.11-1 (p. 2-16)
	• White clip			● ● ●			SE ⦶ VR1, W CLIP	0.785 V (white clip) [NTSC] 0.77 V (white clip) [PAL]	2.11-2 (p. 2-16)
	• Offset voltage (Auto black)			●		Viewfinder display	CP ⦶ VR5, AD OFFSET	Viewfinder display indicates "0".	2.8-4 (p. 2-12)
	• Auto white			●	CHECK ON OFF CC	Viewfinder display	CP ⦶ VR1, B WHT ⦶ VR2, R WHT	Viewfinder display indicates "0".	2.12 (p. 2-18)
	• NAM								
CONTOUR CORRECTOR	• V. balance				CHECK OFF ON CC	CC ◎ TP4 (Observe at V-rate)	CC ⦶ VR1, V BAL	Minimum video component	2.13-2 (p. 2-19)
	• Noise slice					VIDEO OUT	Lens iris	0.57 V (white peak)	2.13-3 (p. 2-19)
							CC ⦶ VR4, NOISE SLICE	Set noise level to 3/4 of that with NOISE SLICE set open	
	• V. contour						CC ⦶ VR2, V LEVEL	**0.10V** (V. contour level) [NTSC] **0.08V** (V. contour level) [PAL]	2.13-4 (p. 2-20)
	• H. contour						CC ⦶ VR3, H LEVEL	**0.10V** (H. contour level)[NTSC] **0.08V** (H. contour level) [PAL]	2.13-5 (p. 2-20)



Note: Arrangement of adjustment parts and measuring points are illustrated on the last page of this section. It is suggested to fold out the page for referring to parts location as shown in the figure.

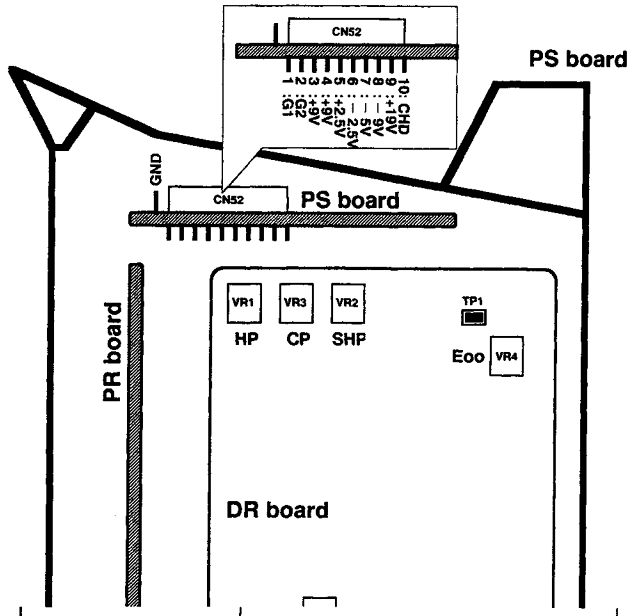


No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

2.6 CHECKING OF POWER SUPPLY (PS) VOLTAGES

Note: • Before connecting a digital voltmeter's probe to an adjustment part for checking, make sure to turn off the power switch every time in order to avoid shortcircuit between terminals.

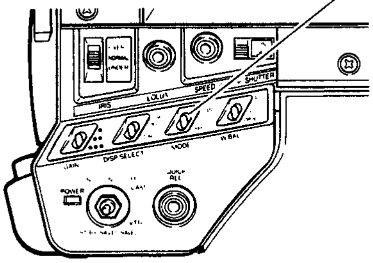
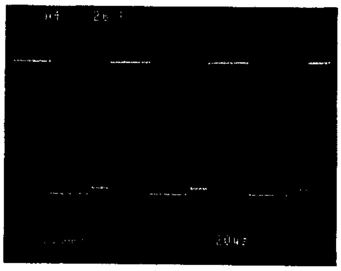
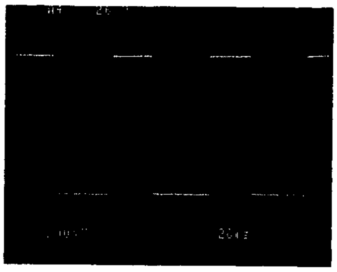
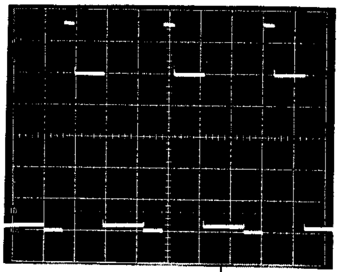
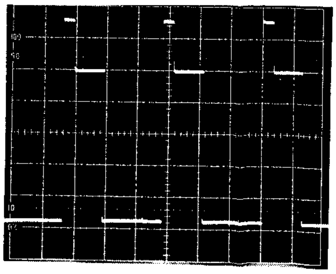
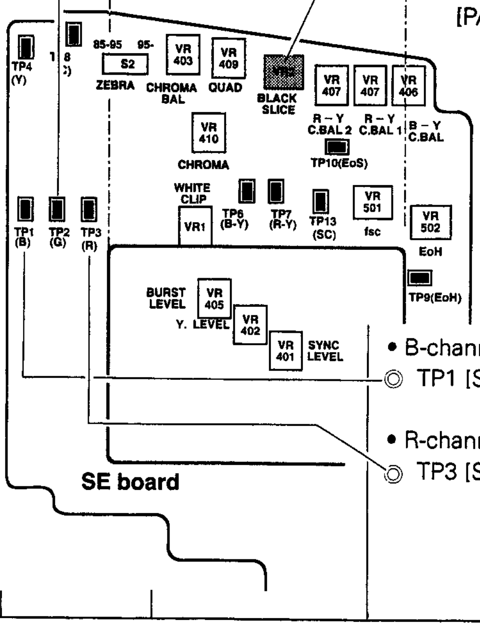
No.	Item	Measuring instruments & Input signals	Measuring point / Adjustment parts / Adjustment level	Adjustment procedure
1	Check of supply voltages	• Digital voltmeter		1) Confirm that each voltage meets the specified value since there is no part provided for adjustment. If not, first check whether the power supply to this set satisfies the requirements in the voltage and capacitance, or not.
	+9 V		◎ CN52 pin 3 [PS] ☆ +9 V ± 0.4 V	
	+2.5 V		◎ CN52 pin 5 [PS] ☆ +2.5 V ± 0.5 V	
	-2.5 V		◎ CN52 pin 6 [PS] ☆ -2.5 V ± 0.5 V	
	-5 V		◎ CN52 pin 7 [PS] ☆ -5 V ± 0.25 V	
	-9 V		◎ CN52 pin 8 [PS] ☆ -9 V (-9 V to - 10 V)	
	+19 V		◎ CN52 pin 9 [PS] ☆ +19 V ± 0.5 V	

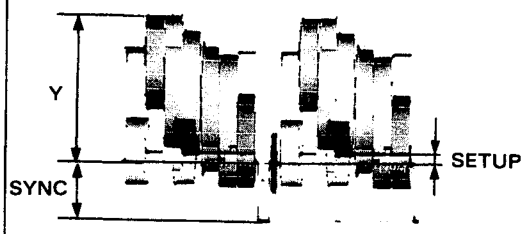
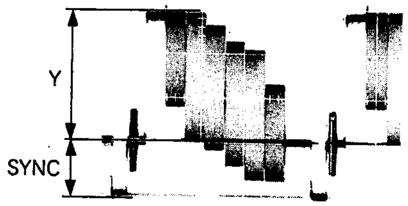
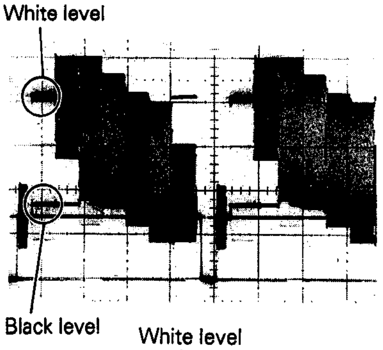
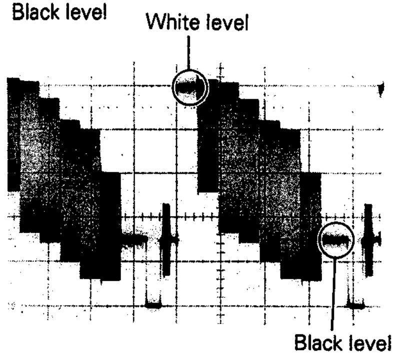
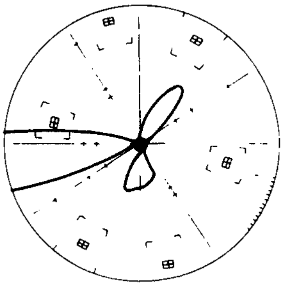


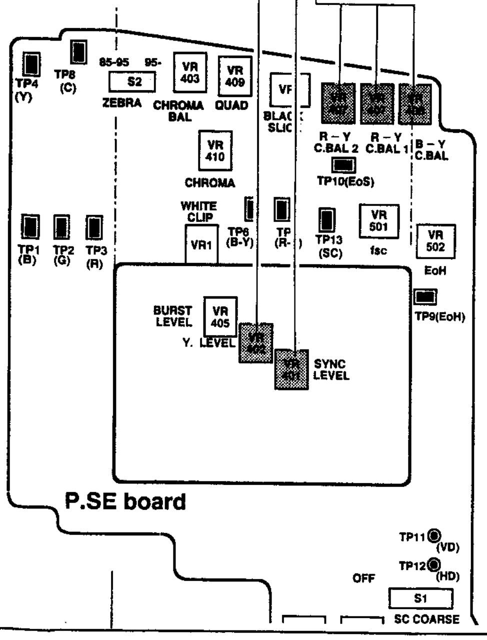
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

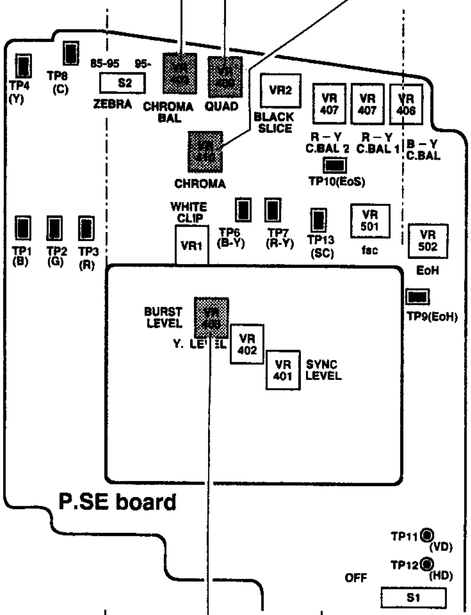
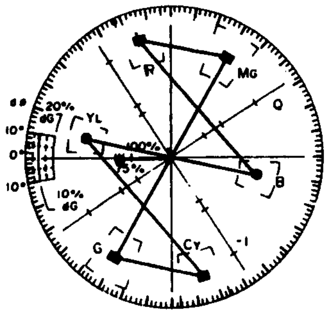
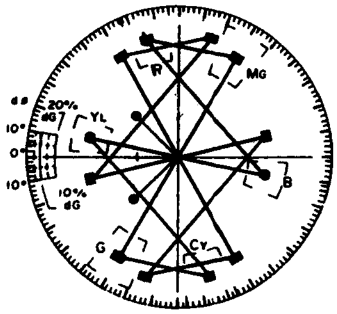
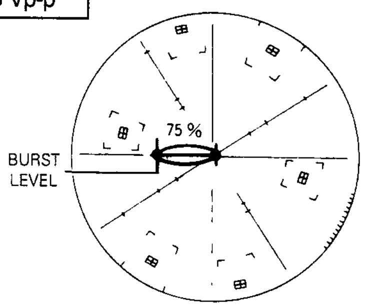
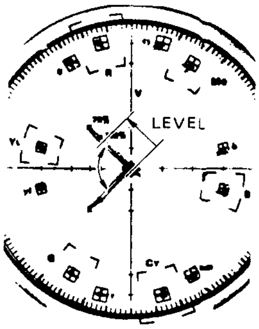
2.7 ADJUSTMENT OF ENCODER

Note: • When proceeding to adjust the following items without a vectorscope, perform the items from No. 2 "Black slice level adjustment" to the item No. 4 "Carrier balance adjustment" only.

1	Preparation			1) Set the MODE switch to "BARS" to output color bars signal. 2) Connect an oscilloscope to the VIDEO OUTPUT terminal with a 75 Ω terminator.
2	Black slice level adjustment	• Oscilloscope (H-rate, 10 : 1) or Waveform monitor • Color bars output	• G-channel ◎ TP2 [SE] ⦶ BLACK SLICE (VR2) [SE] ☆ Equalize blanking and pedestal levels. [NTSC]  NO GOOD  GOOD [PAL]    TP4 (Y) 85-95 95- S2 ZEBRA VR 403 CHROMA BAL VR 409 QUAD VR2 BLACK SLICE VR 407 R − Y C.BAL 2 VR 407 R − Y C.BAL 1 VR 406 B − Y C.BAL VR 410 CHROMA TP10(EoS) WHITE CLIP VR1 TP6 (B-Y) TP7 (R-Y) TP13 (SC) VR 501 fsc VR 502 EoH TP1 (B) TP2 (G) TP3 (R) TP9(EoH) BURST LEVEL VR 405 Y. LEVEL VR 402 VR 401 SYNC LEVEL SE board • B-channel ◎ TP1 [SE] • R-channel ◎ TP3 [SE]	1) Remove difference between video pedestal level and blanking level. 2) Check that there is no difference between blanking and pedestal levels both on B and R channels. If there is, adjust VR7 to minimize the level difference on respective channels.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
3	Bars level adjustment	• Oscilloscope (H-rate, 10 : 1) or Waveform monitor • Color bars output	VIDEO OUT connector (with 75 Ω terminator) • Y Ⓣ Y LEVEWL (VR402) [SE] ☆ NTSC 100IRE (0.714 Vp-p) PAL 100% (0.7 Vp-p) • SYNC Ⓣ SYNC LEVEL (VR401) [SE] ☆ NTSC 40IRE (0.286 Vp-p) PAL 0.3 Vp-p • SETUP (Check only) ☆ 7.5 IRE (53 mVp-p) [NTSC only]	1) Adjust respective bar levels as specified. — NTSC —  — PAL — 
4	Carrier balance adjustment		◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ NTSC R-Y C.BAL1 (VR407) [SE] B-Y C.BAL (VR406) [SE] PAL R-Y C.BAL1 (VR407) [SE] R-Y C.BAL2 (VR408) [SE] B-Y C. BAL (VR406) [SE] ☆ Minimum carrier leak	1) Alternately turn the VRs to minimize carrier leak in white and black portions. [NTSC]  [PAL]  **● When vectorscope is used:** 1) Set vectorscope's GAIN con-trol to MAX. position. 2) Turn C. BAL VRs alternately to position the spots in the center. 

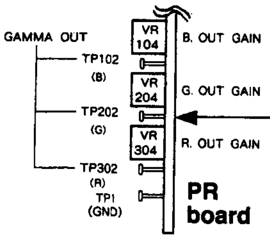

TP4 (Y)
TP8 (C)
85-95
95-
S2
ZEBRA
VR 403
CHROMA BAL
VR 409
QUAD
BLAC SLIC
R-Y C.BAL 2
R-Y C.BAL 1
B-Y C.BAL
TP10(EoS)
VR 410
CHROMA
WHITE CLIP
VR1
TP6 (B-Y)
TP (R-)
TP13 (SC)
VR 501
fsc
VR 502
EoH
TP9(EoH)
TP1 (B)
TP2 (G)
TP3 (R)
BURST LEVEL
VR 405
Y. LEVEL
VR 402
VR 401
SYNC LEVEL
P.SE board
TP11 (VD)
TP12 (HD)
OFF
S1
SC COARSE

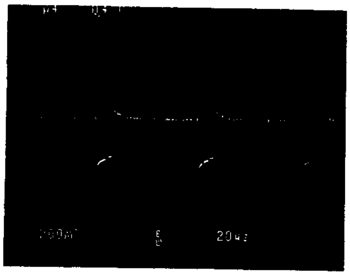
No.	Item	Measuring instruments & input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
5	Chroma signal adjustment	• Vectorscope • Color bars output	◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ CHROMA BAL (VR403) Ⓣ QUAD (VR409) [SE] Ⓣ CHROMA (VR410) [SE]  TP4 (Y) TP8 (C) 85-95 95- S2 ZEBRA CHROMA BAL QUAD VR2 BLACK SLICE VR 407 VR 407 VR 406 R-Y C.BAL 2 R-Y C.BAL 1 B-Y C.BAL CHROMA TP10(EoS) WHITE CLIP VR1 TP6 (B-Y) TP7 (R-Y) TP13 (SC) VR 501 fsc VR 502 EoH TP1 (B) TP2 (G) TP3 (R) TP9(EoH) BURST LEVEL Y. LEVEL VR 402 VR 401 SYNC LEVEL P.SE board TP11 (VD) TP12 (HD) OFF S1	1) Set a vectorscope's GAIN control to the "CAL" or 75% position (preset position). 2) Alternately turn the VRs to position all spots (R, G, B, Mg, Cy, Yl) in the specified points respectively.  R MG Q YL 20% dG 10° 0° 10° 10% dG 100% 75% B G CY -I [NTSC]  R MG YL 20% dG 10° 0° 10° 10% dG B G CY [PAL]
6	Burst level adjustment		◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ BRUST LEVEL (VR405) [SE] ☆ NTSC 0.28 Vp-p PAL 0.3 Vp-p	1) Adjust the level as specified.  75 % BURST LEVEL NTSC  PAL

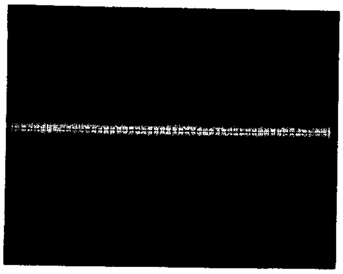
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

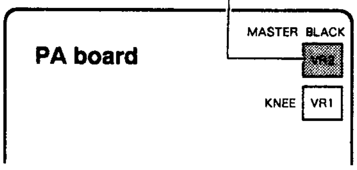
2.8 ADJUSTMENT OF MASTER BLACK

1	Master black adjustment	• Lens: Capped • Black adjusting mode	◎ TP202 [PR] ⦶ MASTER BLACK (VR2) [PA] ☆ Center of black carrier accords with blanking.	1) Accord the center of video noise with the blanking period. Return the GAIN switch to "•" position.


GAMMA OUT
VR 104
B. OUT GAIN
TP102 (B)
VR 204
G. OUT GAIN
TP202 (G)
VR 304
R. OUT GAIN
TP302 (R)
TP1 (GND)
PR board


NG


OK

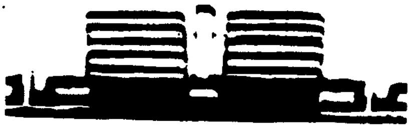

PA board
MASTER BLACK
VR2
KNEE
VR1

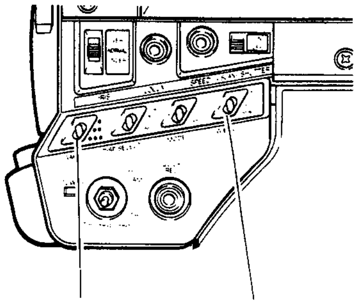
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

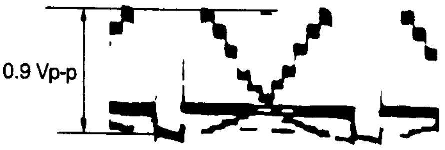
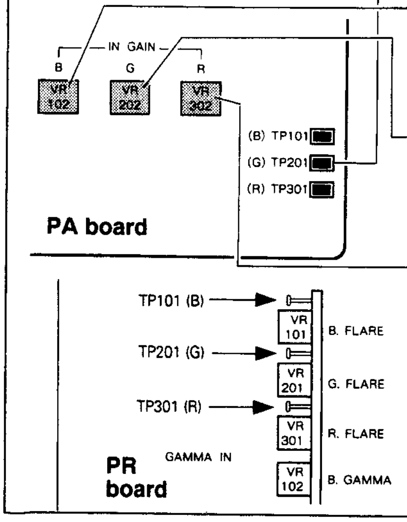
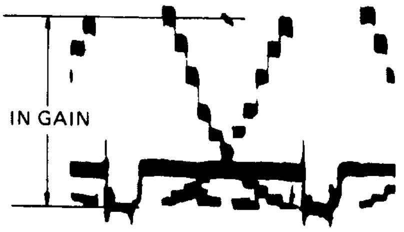
2.9 ADJUSTMENT OF INPUT GAIN (Setting of input signal level)

Note:
- After completing this input gain adjustment, do not disturb the lens iris until the R/B gain setting is finished.
- Lighting should be set in the following conditions.
  1) When input signal level is 100 %, the lens iris should be set to F5.6 or smaller stop (the lens with extender shoule be set to X1).
  2) Illumination must be uniform on the camera subject.
  3) Set the IRIS MODE switch of the lens to "M" for manual mode.

Connect oscilloscope to TP101 (B-ch) of PA board, and adjust illumination so that video signal waveform observed at V-rate is flat.





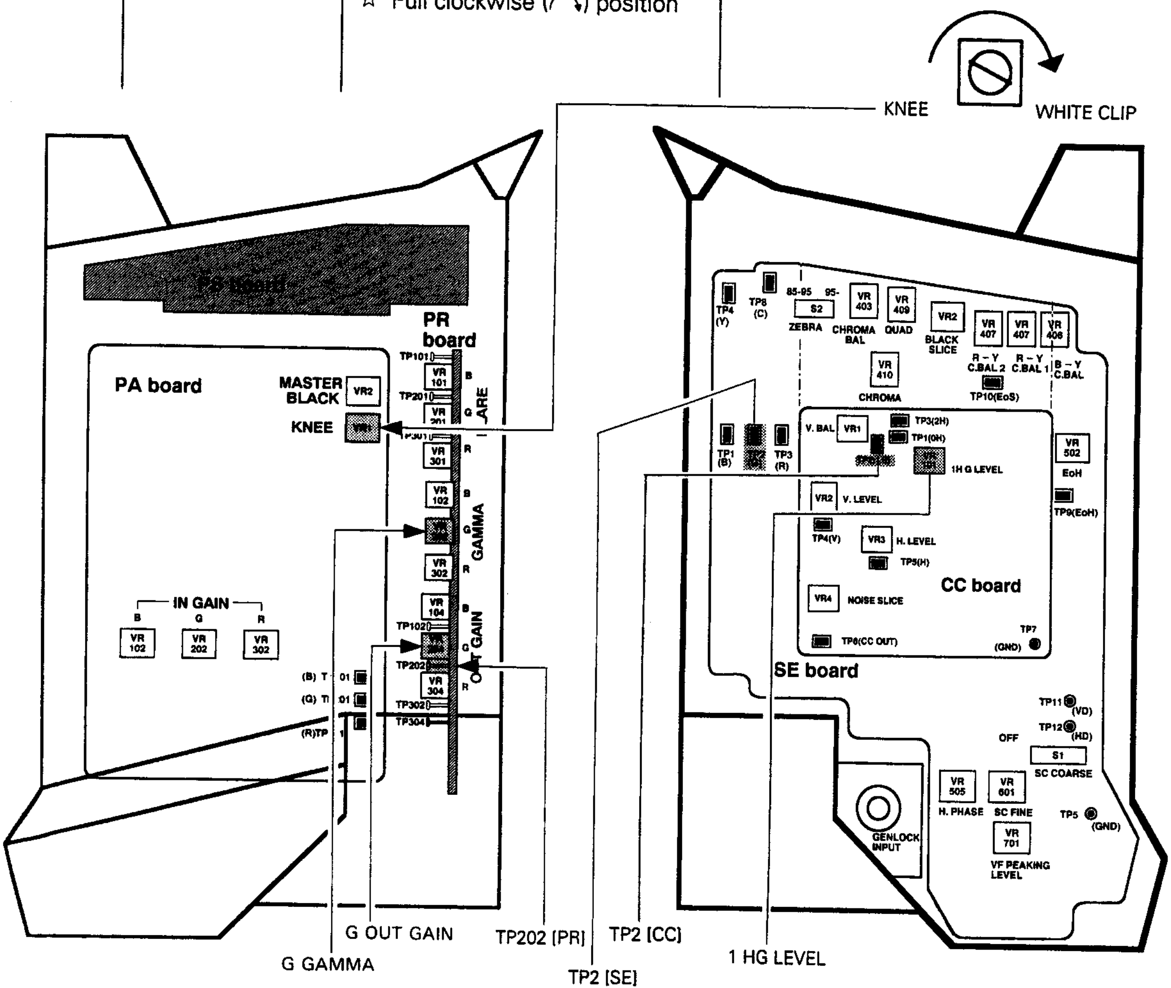
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
1	Iris setting	• Oscilloscope (H-rate, 10 : 1) • Gray scale chart	◎ TP201 [PA] ⏀ Lens iris ☆ 0.9 Vp-p	1) Confirm that every switch of the camera is set to the standard position **(see Section 2.2.4).** Particularly confirm that the W. BAL switch is set to "PRESET" and the GAIN switch to " • ". 2) Shoot a gray scale chart while adjusting the lens iris to obtain the specified level. 
2	Input gain adjustment  IN GAIN B G R VR 102 VR 202 VR 302 (B) TP101 (G) TP201 (R) TP301 PA board TP101 (B) TP201 (G) TP301 (R) VR 101 B. FLARE VR 201 G. FLARE VR 301 R. FLARE GAMMA IN VR 102 B. GAMMA PR board		• B channel ◎ TP101 [PR] ⏀ B IN GAIN (VR102) [PA] ☆ 1.2 Vp-p • G channel ◎ TP201 [PR] ⏀ G IN GAIN (VR202) [PA] ☆ 1.2 Vp-p • R channel ◎ TP301 [PR] ⏀ R IN GAIN (VR302) [PA] ☆ 1.2 Vp-p	1) Confirm that input gain meets the specified level on respective channels. If there is something incorrect, adjust it. 

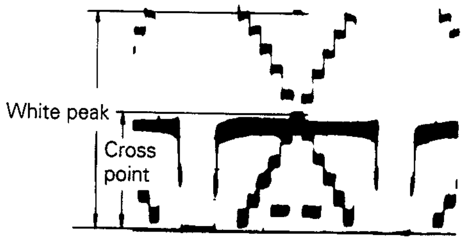
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

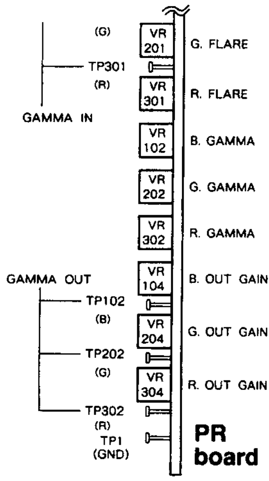
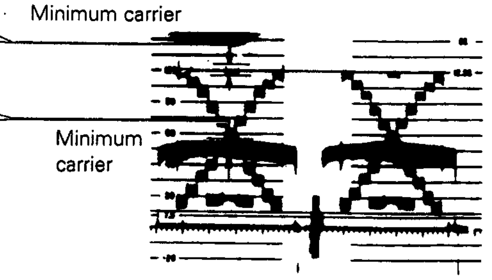
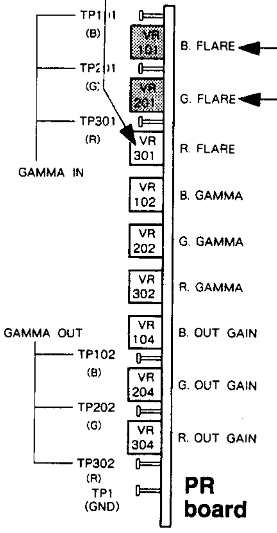
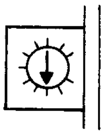
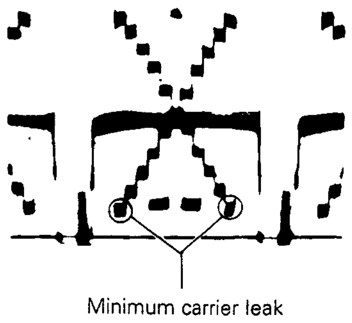
2.10 ADJUSTMENT OF VIDEO LEVEL

Note: • This adjustment must follow "2.9 ADJUSTMENT OF INPUT GAIN".
Make sure to proceed to this adjustment after completing the input gain adjustment.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
1	Preparation		⦶ KNEE (VR1) [PA] ⦶ WHITE CLIP (VR6) [SE] ☆ Full clockwise (↷) position	1) Turn the specified VRs fully clockwise (↷) to release knee and white clip.


KNEE
WHITE CLIP
PA board
MASTER BLACK
VR2
KNEE
PR board
TP101
VR 101
TP201
VR 201
VR 301
VR 102
VR 302
VR 104
TP102
TP202
VR 304
TP302
TP304
GAMMA
OUT GAIN
IN GAIN
B
G
R
VR 102
VR 202
VR 302
TP4 (Y)
TP8 (C)
S2
ZEBRA
VR 403
CHROMA BAL
VR 409
QUAD
VR2
BLACK SLICE
VR 407
VR 406
R-Y C.BAL 2
R-Y C.BAL 1
B-Y C.BAL
VR 410
CHROMA
TP10(EoS)
V. BAL
VR1
TP3(2H)
TP1(0H)
1H G LEVEL
TP1 (B)
TP3 (R)
VR2
V. LEVEL
VR 502
EoH
TP9(EoH)
TP4(V)
VR3
H. LEVEL
TP5(H)
VR4
NOISE SLICE
CC board
TP6(CC OUT)
TP7 (GND)
SE board
TP11 (VD)
TP12 (HD)
OFF
S1
SC COARSE
VR 505
H. PHASE
VR 601
SC FINE
TP5 (GND)
VR 701
VF PEAKING LEVEL
GENLOCK INPUT
G OUT GAIN
TP202 [PR]
TP2 [CC]
G GAMMA
TP2 [SE]
1 HG LEVEL

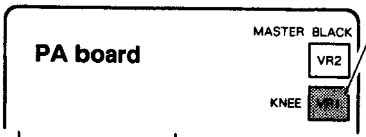
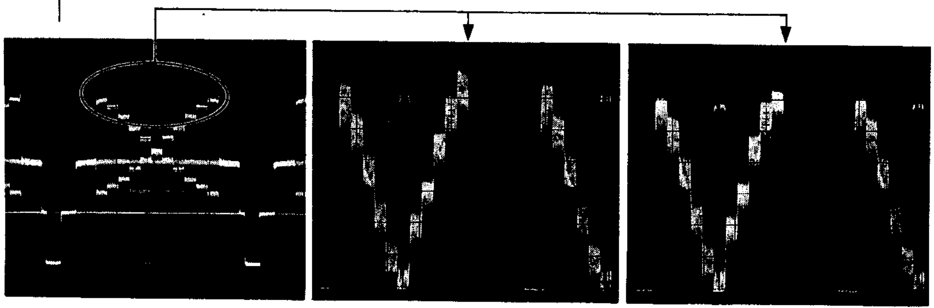
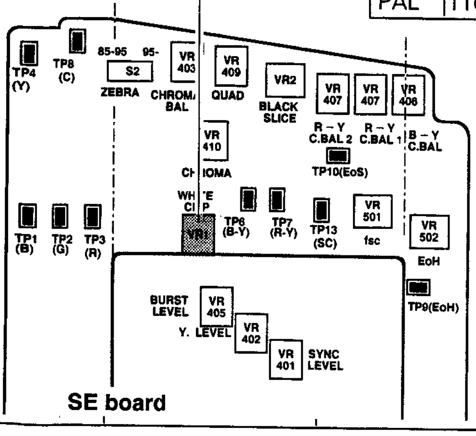
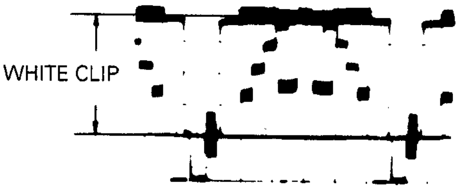
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
2	G channel Gain & Gamma adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ TP202 [PR] ⦶ G OUT GAIN (VR204) [PR] ☆ 1.0 V	1) Adjust the white peak of the gray scale chart as specified.
			◎ TP2 [CC] ⦶ 1HG LEVEL (VR101) [CC] ☆ 0.8 Vp-p	1) Adjust the white peak of the gray scale chart as specified.
			◎ TP2 [SE] • White peak ⦶ G OUT GAIN (VR204) [PR] ☆ 1.2 Vp-p	2) Adjust levels to be the specified values.
			◎ TP2 [SE] • Cross point ⦶ G GAMMA (VR202) [PR] ☆ Stairstep wave of gray scale waveform should be aligned in a straight line.	 White peak Cross point

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
3	R/B channel Gain & Gamma adjustment  (G) TP301 (R) GAMMA IN VR 201 G. FLARE VR 301 R. FLARE VR 102 B. GAMMA VR 202 G. GAMMA VR 302 R. GAMMA GAMMA OUT TP102 (B) VR 104 B. OUT GAIN TP202 (G) VR 204 G. OUT GAIN TP302 (R) VR 304 R. OUT GAIN TP1 (GND) PR board	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ B OUT GAIN (VR104) [PR] ⦶ R OUT GAIN (VR304) [PR] ⦶ B GAMMA (VR102) [PR] ⦶ R GAMMA (VR302) [PR] ◎ VIDEO OUT connector ☆ NTSC White peak level 0.714 Vp-p Cross point 0.41 Vp-p PAL White peak level 0.7 Vp-p Cross point 0.39 Vp-p	3) Adjust VRs for minimum video white level as well as for minimum carrier at cross point.  4) Confirm that levels of white peak and cross point are as respectively specified. When either of them is different, repeat the previous steps from 2).
4	Flare level adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	⦶ R FLARE (VR301) [PR] ☆ Graduations' 2nd clockwise position from the full counter-clockwise position ◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ B FLARE (VR101) [PR] ⦶ G FLARE (VR201) [PR] ☆ Minimum carrier leak  TP101 (B) VR 101 B. FLARE TP201 (G) VR 201 G. FLARE TP301 (R) VR 301 R. FLARE GAMMA IN VR 102 B. GAMMA VR 202 G. GAMMA VR 302 R. GAMMA GAMMA OUT TP102 (B) VR 104 B. OUT GAIN TP202 (G) VR 204 G. OUT GAIN TP302 (R) VR 304 R. OUT GAIN TP1 (GND) PR board	1) Set the R FLARE VR to the position shown in the figure below.  2) Minimize carrier leak with the B FLARE and G FLARE VRs.  3) Quickly change the iris setting position between OPEN and CLOSE while confirming that no coloring is observed in the picture. If there is coloring observed at that time, fine adjust the B FLARE and G FLARE VRs.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

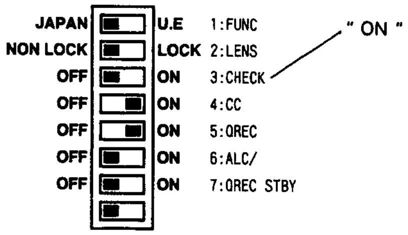
2.11 ADJUSTMENT OF KNEE SLOPE AND WHITE CLIP

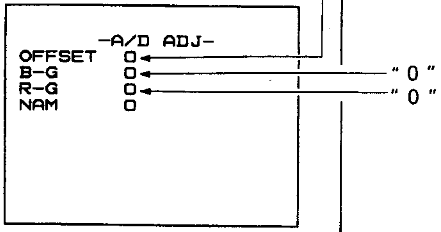
Note: • Make sure to proceed to this section after completing "2.10 Adjustment of Video Level".

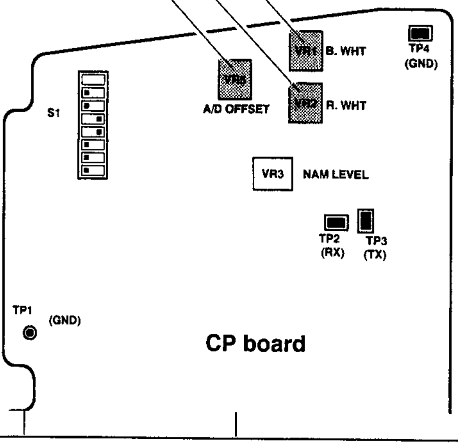
1	Preparation adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1) or Waveform monitor	◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ Lens iris ☆ NTSC: 100 IRE (0.714 Vp-p) PAL: 0.7 Vp-p	1) Set video level as specified.
	 PA board MASTER BLACK VR2 KNEE VR1		⦶ KNEE (VR1) [PA] ☆ Knee point : NTSC: 100 IRE (0.714 Vp-p) PAL: 0.7 Vp-p	2) Turn the VR fully clockwise once, then slowly return it counterclockwise up to a point just before white peak is clipped.  GOOD NO GOOD
2	White clip adjustment  TP4 (Y) TP8 (C) 85-95 95- S2 ZEBRA VR 403 CHROMA BAL VR 409 QUAD VR2 BLACK SLICE VR 407 R – Y C.BAL 2 VR 407 R – Y C.BAL 1 VR 406 B – Y C.BAL VR 410 CHROMA TP10(EoS) WHITE CLIP VR1 TP1 (B) TP2 (G) TP3 (R) TP6 (B-Y) TP7 (R-Y) TP13 (SC) VR 501 fsc VR 502 EoH TP9(EoH) BURST LEVEL VR 405 Y. LEVEL VR 402 VR 401 SYNC LEVEL SE board		◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ WHITE CLIP (VR1) [SE] ☆ NTSC: 110IRE (0.785 Vp-p) PAL: 110% (0.77 Vp-p)	1) Set the GAIN switch to "•••" (+18 dB) position. 2) Adjust clip level as specified. 

2.12 ADJUSTMENT OF OFFSET/AUTO-WHITE/AUTO-IRIS

Note:
- For proceeding to this section, it is the first condition that video level has been correctly adjusted by the procedures of the sections 2.8 through 2.11.
- Set the lens iris to "M" for manual operation.
- Set the GAIN switch to "·" (0 dB) position.
- Set the camera to the check mode for this adjustment. In the check mode, signal levels (B-G and R-G) detected on R, G and B channels are displayed in the viewfinder. With correct adjustment of the auto white and the auto black functions, the CPU operates to match detected B and R channel levels with the G channel level. Therefore, detection levels of respective channels must accord with each other in the condition that the white balance and the black balance of the camera are correctly adjusted. The purpose of this section is to accord the detecting levels of B and R channels with G channel's.



No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
1	Preparation	• Gray scale chart ↓ Just scan • Oscilloscope	◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ Lens iris ☆ NTSC: 100 IRE (0.714 Vp-p) PAL: 0.7 Vp-p	1) Adjust video level as specified.
2	Offset voltage adjustment	• Viewfinder	◎ Viewfinder display Ⓣ AD OFFSET (VR5) [CP] ☆ Displayed value: "0"	1) Adjust the displayed value to be "0".
3	Auto white adjustment		◎ Viewfinder display  -A/D ADJ- OFFSET 0 B-G 0 R-G 0 NAM 0 " 0 " " 0 " Ⓣ B WHT (VR1) [CP] Ⓣ R WHT (VR2) [CP] ☆ Display values : Set to "0".	2) Adjust VRs to set the displayed value to "0" respectively.

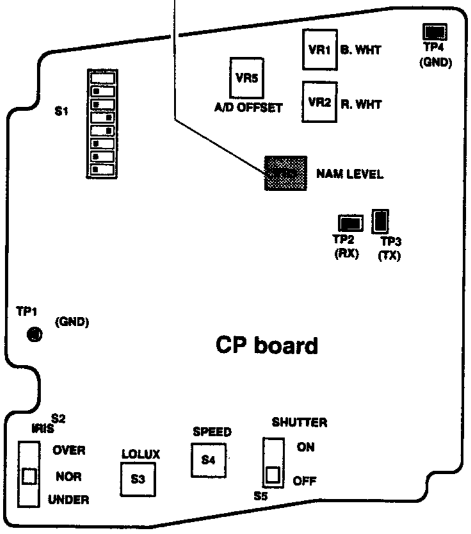


Information

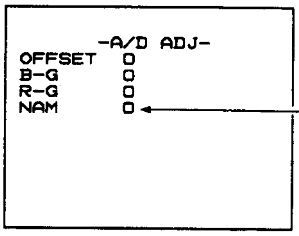
•About OFFSET voltage adjustment

Changing in the wording, "offset voltage adjustment" is put into "error adjustment of CPU's A-D converter".
In detail, AUTO WHITE and AUTO BLACK adjustments are performed by the CPU, which compares and calcuates digital values of B, G and R channel video signals that are output from the video process circuit and converted to digital data by the A-D converter. The purpose of this adjustment is to compensate erors made by this A-D convertor.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
4	NAM value adjustment		◎ Viewfinder display ⦶ NAM LEVEL (VR3) [CP] ☆ Display value : Set to "0".	NAM (No Additive Mix) signal is used as the reference signal to control the lens iris by the CPU. 2) Adjust the VR to set the value displayed in the viewfinder to "0". 3) Turn the CHECK switch OFF.



VR1
B. WHT
TP4
(GND)
VR5
A/D OFFSET
VR2
R. WHT
S1
NAM LEVEL
TP2
(RX)
TP3
(TX)
TP1
(GND)
CP board
S2
IRIS
OVER
NOR
UNDER
LOLUX
S3
SPEED
S4
SHUTTER
ON
OFF
S5

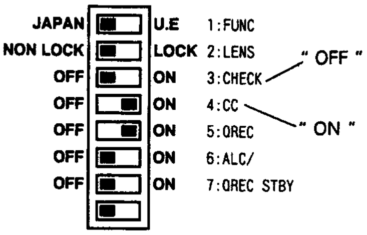


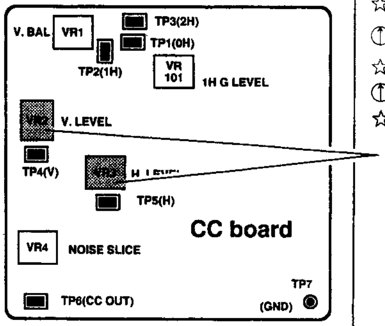
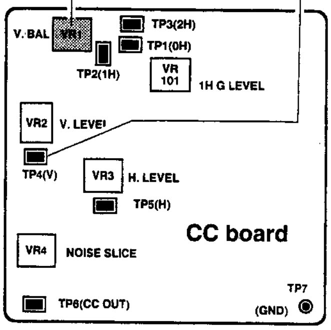
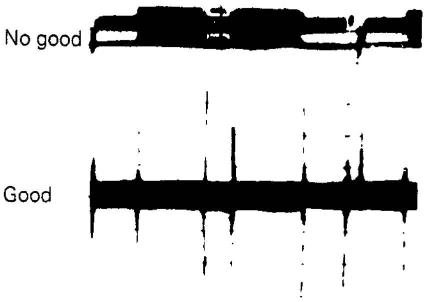
-A/D ADJ-
OFFSET 0
B-G 0
R-G 0
NAM 0

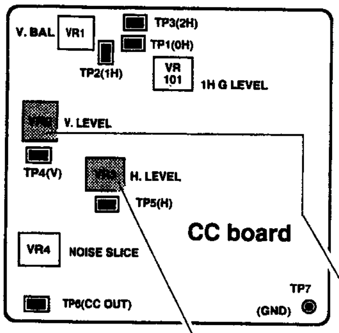
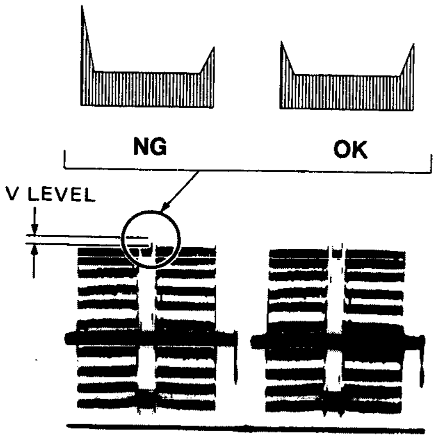
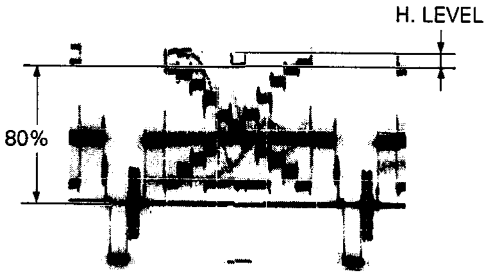
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure

2.13 ADJUSTMENT OF CONTOUR CORRECTOR

Note:
- For proceeding to this section, it is the first condition that video output level has been adjusted correctly by the procedures of the sections 2.9 through 2.11.
- Set the CHECK MODE switch on the CP board to "OFF" for adjustment in the normal mode.
- Set the CC switch and the CONTOUR switch to "ON" before proceeding to do the following adjustment.

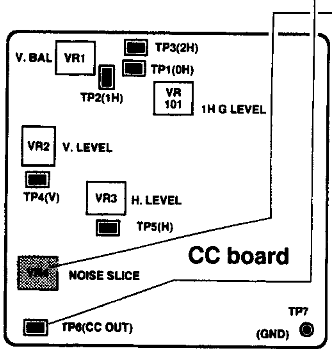
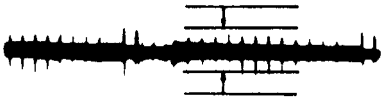

JAPAN
NON LOCK
OFF
OFF
OFF
OFF
OFF
U.E
LOCK
ON
ON
ON
ON
ON
1:FUNC
2:LENS
3:CHECK
4:CC
5:QREC
6:ALC/
7:QREC STBY
" OFF "
" ON "

1	Preparation  V.BAL VR1 TP3(2H) TP1(0H) TP2(1H) VR 101 1H G LEVEL VR2 V. LEVEL TP4(V) VR3 H. LEVEL TP5(H) CC board VR4 NOISE SLICE TP7 (GND) TP6(CC OUT) MAX (↷)	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1) or Waveform monitor	◎ VIDEO OUT connector (with 75 Ω terminator) ⌽ Lens iris ☆ NTSC 100 IRE (0.714 Vp-p) PAL 0.7 Vp-p (white level of gray scale chart) --- ⌽ V LEVEL (VR2) [CC] ☆ Max. (Full clockwise position) ⌽ H LEVEL (VR3) [CC] ☆ Max. (Full clockwise position) ⌽ NOISE SLICE (VR4) [CC] ☆ Max. (Full clockwise psoition)	1) Confirm that all settings of the camera are in the normal state (see page 2-3). Particularly check the following switch settings. W. BAL switch : "PRESET" GAIN switch : " • " (0 dB) 2) Shoot the gray scale chart while adjusting the lens iris to obtain the specified level. --- 3) Set respective VRs to the maximum position. Note: This setting is not required for fine adjustment of contour level only. In this case, proceed to the item No. 4 "V. contour level adjustment".
2	V. zero balance adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (V-rate, 10 : 1)	◎ TP4 [CC] ⌽ V BAL (VR1) [CC] ☆ Minimum video component  V.BAL VR1 TP3(2H) TP1(0H) TP2(1H) VR 101 1H G LEVEL VR2 V. LEVEL TP4(V) VR3 H. LEVEL TP5(H) CC board VR4 NOISE SLICE TP7 (GND) TP6(CC OUT)	4) Observe the waveform with the oscilloscope at V-rate while minimizing video components. 

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure
3	V. contour level adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (V-rate, 10 : 1)  V. BAL VR1 TP3(2H) TP1(0H) TP2(1H) VR 101 1H G LEVEL V. LEVEL TP4(V) H. LEVEL TP5(H) VR4 NOISE SLICE CC board TP7 (GND) TP6(CC OUT)	◎ VIDEO OUT connector (with 75 Ω terminator) ⌽ Lens iris ☆ NTSC 80 IRE (0.57 Vp-p) PAL 80% (0.56 Vp-p) ◎ VIDEO OUT connector (with 75 Ω terminator) ⌽ V LEVEL (VR2) [CC] ☆ NTSC 14 IRE (0.10 Vp-p) PAL 10% (0.08 Vp-p)	5) Slowly move the camera up and down and set it where the window section of the gray scale chart has the same contour level. 6) Set video level as specified.  7) Adjust the contour level as specified.
4	H. contour level adjustment	• In-megacycle chart (JVC part No.: RESC-010) ↓ Just scan	◎ VIDEO OUT connector (with 75 Ω terminator) ⌽ H LEVEL (VR3) [CC] ☆ NTSC 14 IRE (0.10 Vp-p) PAL 10% (0.08 Vp-p)	8) Adjust the video signal level to be 80% as well as described in the preceding page. 9) Adjust the contour level as specified. 

CAUTION

If specified contour level cannot be obtained with this adjustment, it maybe results from maladjustment of the item 2.17-6.
In such a case, check and adjust the item again.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⌽) Adjustment level (☆)	Adjustment procedure
5	Noise slice adjustment	• Oscilloscope (H-rate, 10 : 1) or Waveform monitor	◎ VIDEO OUT connector (with 75 Ω terminator) ⌽ Lens iris ☆ 80% [NTSC : 0.57 Vp-p, PAL : 0.56 VP-P] (white level of gray scale chart)	10) Adjust the lens iris to obtain the specified level.
		 V. BAL VR1 TP3(2H) TP1(0H) TP2(1H) VR 101 1H G LEVEL VR2 V. LEVEL TP4(V) VR3 H. LEVEL TP5(H) CC board VR4 NOISE SLICE TP6(CC OUT) TP7 (GND)	◎ TP6 [CC] ⌽ NOISE SLICE (VR4) [CC] ☆ Noise level : 3/4	11) Turn the NOISE SLICE VR fully counter-clockwise (↶) while checking noise level. 12) Adjust the NOISE SLICE VR to reduce the noise level to three quarters (3/4). 

INFORMATION:

The values appearing in the above "Adjustment of Contour Corrector" are just standards. To emphasize contour much more, try to change the previously mentioned adjustment levels as follows.

☆ Noise level specified in "3. Noise slice adjustment" to "more than 3/4".

☆ H. contour level specified in "5. H. contour level adjustment" to "higher" than the appearing value.

However, those level changes should be tried carefully and moderately since either of those changes may result in increase of video noise or noise generation in VTR recording owing to over-modulation. When those level changes are intended, it is required to inform the user beforehand.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

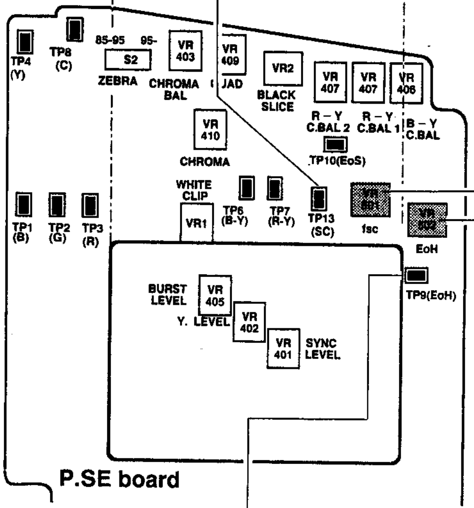
2.14 ADJUSTMENT OF VIEWFINDER

1	VF PEAKING LEVEL adjustment		⦶ VF PEAKING LEVEL (VR701) [SE] ☆ Mechanical center	1) Set the mechanical center position.

2.15 ADJUSTMENT OF SSG (Adjustment of internally synchronizing mode)

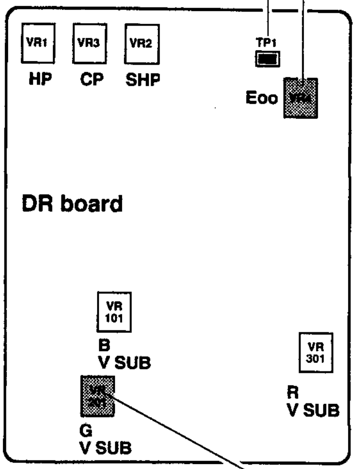
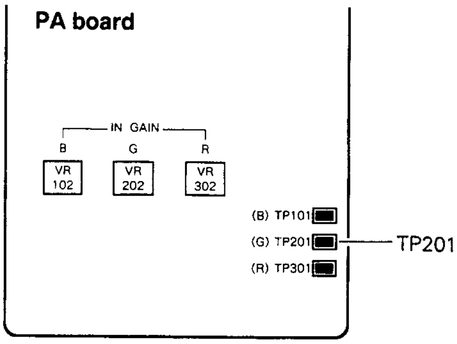
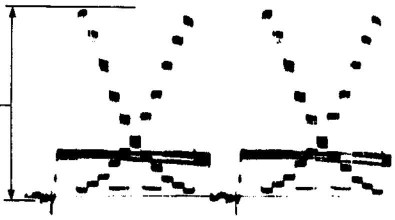
Note:
- Warm up the camera for 15 minutes or more before adjustment.
- Frequency counter to be used must satisfy the following requirements.
  1) 8 digits or more readable.
  2) Stability higher than 0.1 ppm or 1×10^{-7} at 0° C to 40° C.

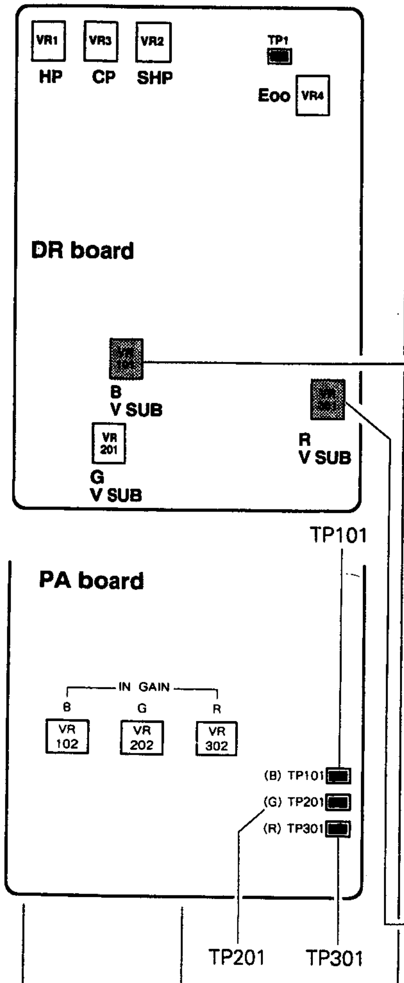
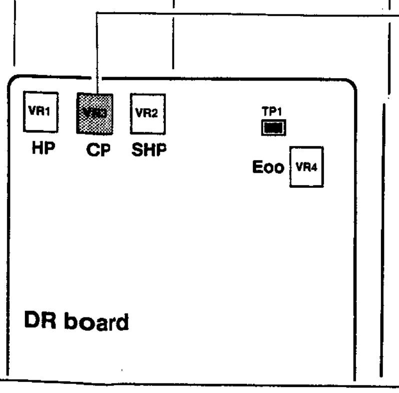
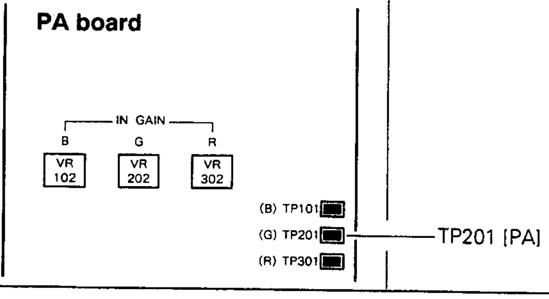
1	SC frequency adjustment	• Frequency counter	◎ TP13 [SE] ⦶ fsc (VR501) ☆ NTSC 3.579545 MHz ± 10 Hz PAL 4.433619 MHz ± 10 Hz	1) Adjust the frequency as specified.
2	E0H voltage adjustment	• Digital voltmeter	◎ TP9 [SE] ⦶ E0H (VR502) [SE] ☆ +4.5 V ± 0.2 V DC	1) Adjust the voltage as specified.

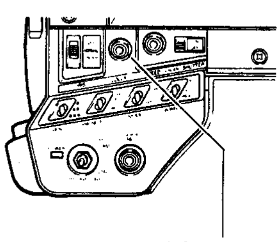
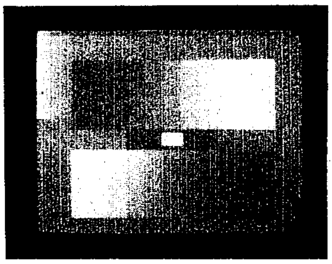
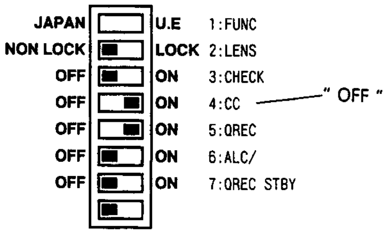
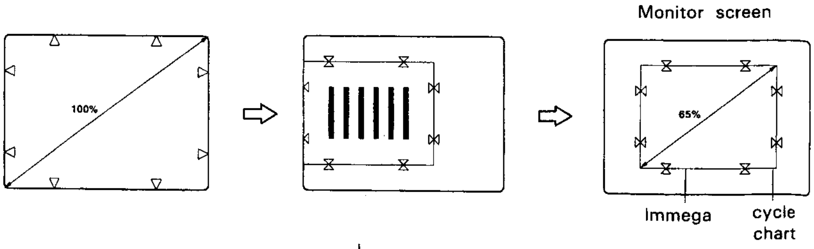

TP4 (Y)
TP8 (C)
85-95
95-
S2
ZEBRA
VR 403
CHROMA BAL
VR 409
JAD
VR2
BLACK SLICE
VR 407
VR 407
VR 406
R – Y C.BAL 2
R – Y C.BAL 1
B – Y C.BAL
VR 410
CHROMA
TP10(EoS)
TP1 (B)
TP2 (G)
TP3 (R)
WHITE CLIP
VR1
TP6 (B-Y)
TP7 (R-Y)
TP13 (SC)
VR 501
fsc
VR 502
EoH
TP9(EoH)
BURST LEVEL
VR 405
Y. LEVEL
VR 402
VR 401
SYNC LEVEL
P.SE board

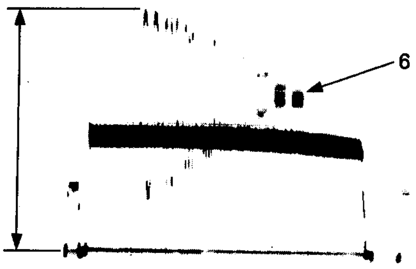
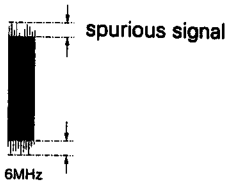
2.16 ADJUSTMENT OF CCD DRIVER AND TIMING GENERATOR

Note: • This adjustment is not required in general except when the optical block assembly is replaced.
• Accordingly, the following procedure is just a reference for the case the VRs concerned are erroneously disturbed.

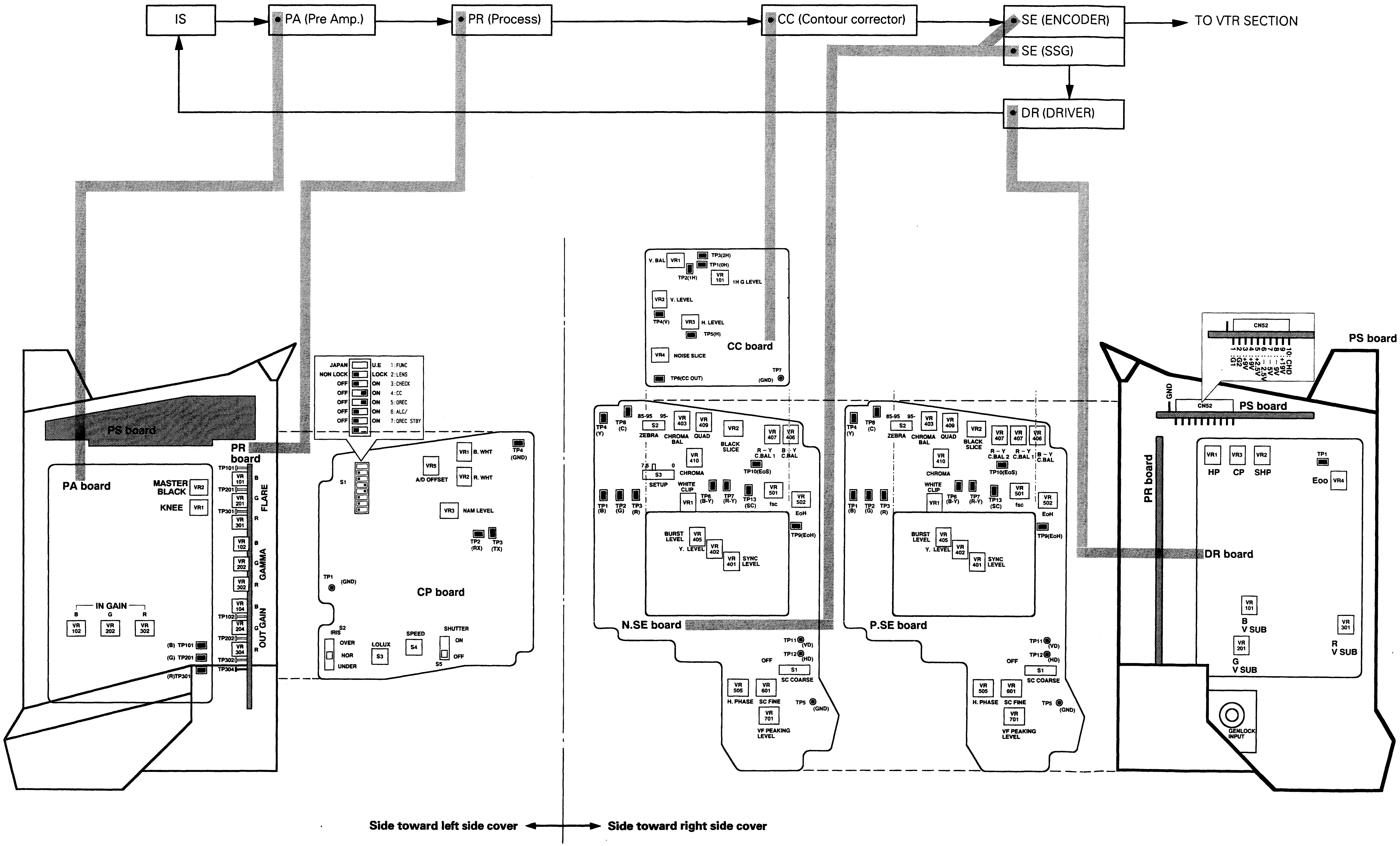
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
1	Preparation			1) Confirm that all settings of the camera are in the normal conditions (see Section 2.2.4).
2	Error voltage adjustment (Lock loop inside timing generator)	• Digitl voltmeter	◎ TP1 [DR] ⦶ EOO (VR4) [DR] ☆ +2.5 V DC  VR1 VR3 VR2 HP CP SHP TP1 Eoo VR4 DR board VR 101 B V SUB VR 301 R V SUB VR 201 G V SUB	1) Adjust the voltage as specified.
3	Vsub voltage adjustment (relating to blooming suppression voltage and dynamic range)	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	⦶ G V SUB (VR201) [DR] ☆ Full counterclockwise position (↶) ◎ TP201 [PA] ⦶ Lens iris ☆ 2.7 Vp-p • G channel ◎ TP201 [PA] ⦶ G V SUB (VR201) [DR] ☆ Just before clipping of white level  PA board IN GAIN B G R VR 102 VR 202 VR 302 (B) TP101 (G) TP201 (R) TP301 TP201	1) Turn the VR fully counterclockwise to eliminate bloom-ing suppression voltage. 2) Adjust the white peak of the gray scale chart to have the specified level.  3) Adjust the G. V SUB VR to the position just before the white level of the gray scale chart is clipped.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
3	 VR1 HP VR3 CP VR2 SHP TP1 Eoo VR4 DR board VR101 B V SUB VR 201 G V SUB VR301 R V SUB TP101 PA board IN GAIN B G R VR 102 VR 202 VR 302 (B) TP101 (G) TP201 (R) TP301 TP201 TP301		• B channel ◎ TP101 [PA] Ⓣ Lens iris ☆ 2.2 Vp-p Ⓣ B V SUB (VR101) [DR] ☆ Just before clipping of white level.	4) In the same manner as mentioned for the G channel (3- (1)), turn the Vsub VRs for the B and R channels ffull counterclockwise. 5) Adjust the white peak of the gray scale chart with the lens iris as mentioned below. For B-ch : 2.20 Vp-p For R-ch : 3.0 Vp-p
			• R channel ◎ TP301 [PA] Ⓣ Lens iris ☆ 3.0 Vp-p Ⓣ R V SUB (VR301) [DR] ☆ Just before clipping of white level.	(Perform the same adjustment as for B-channel to obtain fourfold dynamic range on R-channel.) 6) For B and R channels, adjust the respective VRs to the position just before the white level of the gray scale chart is clipped.
4	Clamp timing adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ TP201 [PA] Ⓣ Lens iris ☆ 0.9 Vp-p (white peak)	1) Adjust the Lens' iris to the specified value.
			Ⓣ SHP (VR2) [DR] ☆ Mechanical center position	2) Set the SHP VR to the mechanical center position.
	 VR1 HP VR3 CP VR2 SHP TP1 Eoo VR4 DR board		◎ TP201 [PA] Ⓣ CP (VR3) [DR] ☆ Just before video level goes down  PA board IN GAIN B G R VR 102 VR 202 VR 302 (B) TP101 (G) TP201 (R) TP301 TP201 [PA]	3) Turn the CP VR fully counterclockwise. 4) Return the CP VR clockwise and set it to the point just before video level is going to decline.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
5	Sample holding timing adjustment (Correlational double sampling timing)	• Gray scale chart ↓ Just scan • WFM • B/W TV monitor	◎ TP201 [PA] Ⓣ SHP (VR2) [DR]	4) Roughly adjust the VR to maximize the signal level.
			◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ Lens iris ☆ **40IRE/40%** NTSC: 0.29 Vp-p PAL : 0.28 Vp-p	6) Set the LOLUX switch to "ON" to set the camera to the LOLUX mode. 7) Adjust video level as specified with the lens iris.
	 LOLUX switch		◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ SHP (VR2) [DR] ☆ Non vertical and horizontal stripes	8) Fine adjust the SHP VR until neither of vertical and horizontal strips is observed without declining the video output.  NO GOOD
6	Half pitch sampling timing adjustment	• In-megacycle chart ↓ 65 % (2/3) of just scan size in the diagonal line. • Oscilloscope (H-rate, 10 : 1)	◎ Y/C OUT connector (with 75 Ω terminator) (for Y signal observation) Ⓣ HP (VR4) [DR] ☆ Point where spurious signal of 6 MHz segment is minimized.	• Set the lens iris to "M" (manual) position. • Set the CONTOUR ON/OFF switch on the CP board to "OFF".  JAPAN U.E 1:FUNC NON LOCK LOCK 2:LENS OFF ON 3:CHECK OFF ON 4:CC " OFF " OFF ON 5:QREC OFF ON 6:ALC/ OFF ON 7:QREC STBY 1) Shoot the in-megacycle chart while adjusting the zoom ring of the lens so that the chart is zoomed out to be 65% (2/3) of the just scan size as compared by the diagonal lines of the two frames.  100% Monitor screen 65% Immega cycle chart

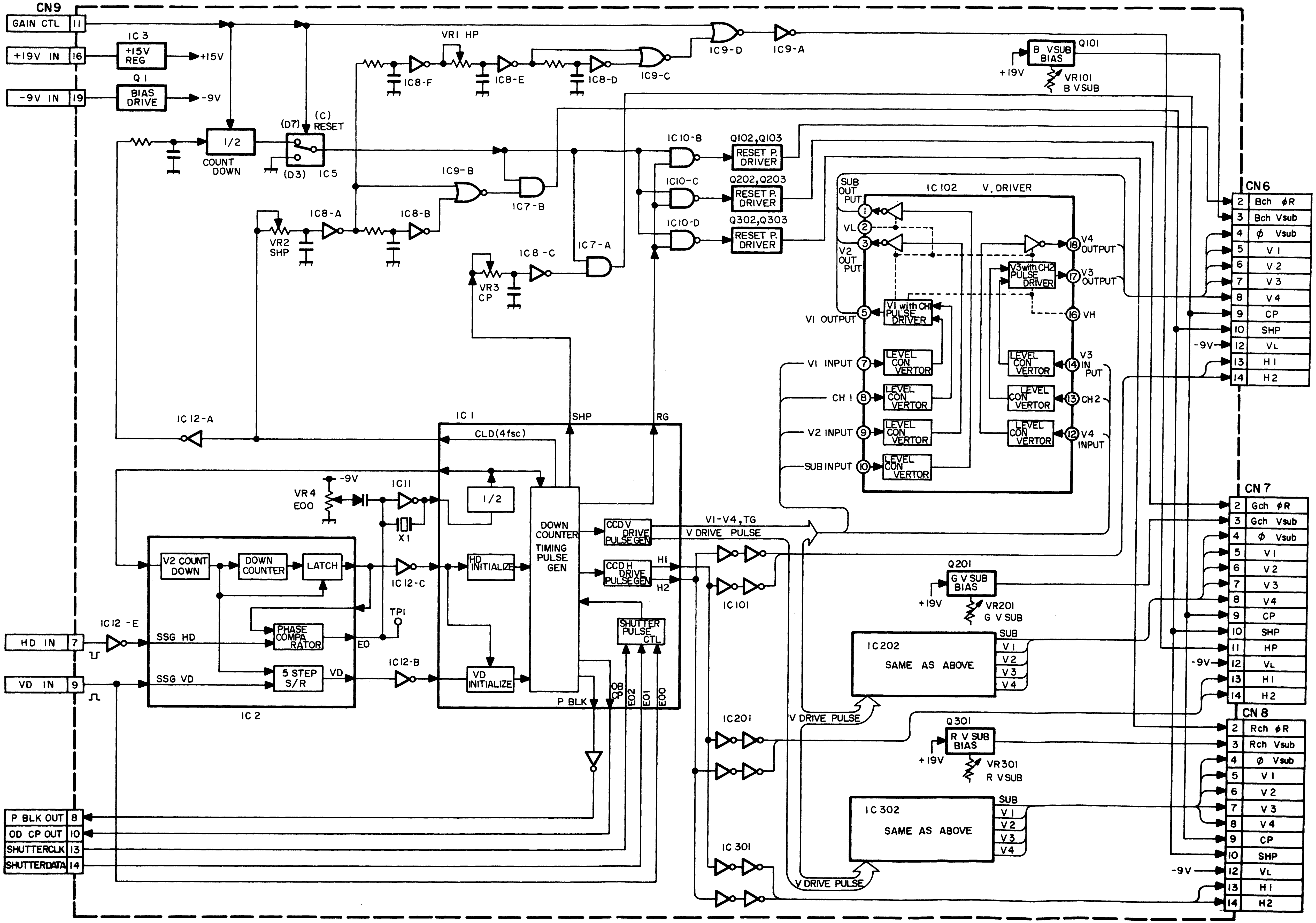
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦽) Adjustment level (☆)	Adjustment procedure
				2) Adjust the lens iris to obtain the specified white peak level.  3) Center the camera lens at the 6 MHz segment of the inmegacycle chart. 4) Observe the 6 MHz segment waveform while adjusting VR1 to minimize the spurious signal (looks serration).  5) Set the CONTOUR switch to "ON" again.

2.18 LOCATION OF ADJUSTMENT PARTS

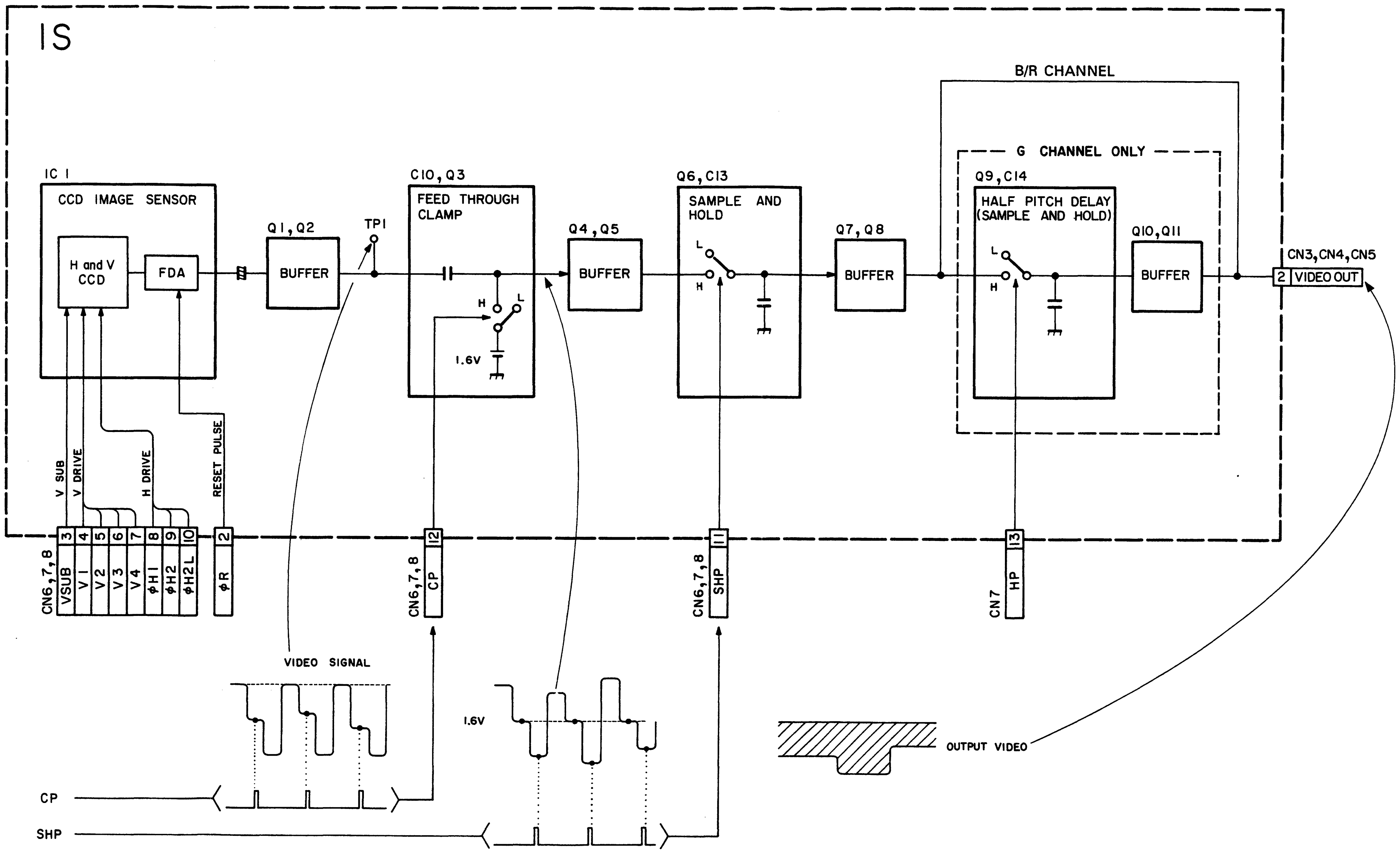

IS
PA (Pre Amp.)
PR (Process)
CC (Contour corrector)
SE (ENCODER)
SE (SSG)
DR (DRIVER)
TO VTR SECTION
PS board
PR board
PA board
MASTER BLACK VR2
KNEE VR1
IN GAIN
B G R
VR 102 VR 202 VR 302
(B) TP101
(G) TP201
(R)TP301
TP101 TP201 TP301 TP102 TP202 TP302 TP304
VR 101 VR 201 VR 301 VR 102 VR 202 VR 302 VR 104 VR 204 VR 304
FLARE
GAMMA
OUT GAIN
JAPAN U.E 1:FUNC
NON LOCK LOCK 2:LENS
OFF ON 3:CHECK
OFF ON 4:CC
OFF ON 5:QREC
OFF ON 6:ALC/
OFF ON 7:QREC STBY
S1
VR5 A/D OFFSET
VR1 B. WHT
VR2 R. WHT
VR3 NAM LEVEL
TP4 (GND)
TP2 (RX) TP3 (TX)
TP1 (GND)
CP board
S2 IRIS
OVER NOR UNDER
LOLUX S3
SPEED S4
SHUTTER ON OFF S5
V. BAL VR1
TP3(2H) TP1(0H) TP2(1H)
VR 101 1H G LEVEL
VR2 V. LEVEL
TP4(V)
VR3 H. LEVEL
TP5(H)
CC board
VR4 NOISE SLICE
TP6(CC OUT)
TP7 (GND)
TP4 (Y) TP8 (C)
85-95 95-
S2
ZEBRA
VR 403 CHROMA BAL
VR 409 QUAD
VR2 BLACK SLICE
VR 407 R – Y C.BAL 1
VR 406 B – Y C.BAL
VR 410 CHROMA
TP10(EoS)
7.5 0 S3 SETUP
WHITE CLIP VR1
TP6 (B-Y) TP7 (R-Y)
TP13 (SC)
VR 501 fsc
VR 502 EoH
TP9(EoH)
TP1 (B) TP2 (G) TP3 (R)
BURST LEVEL VR 405
Y. LEVEL VR 402
VR 401 SYNC LEVEL
N.SE board
TP11 (VD)
TP12 (HD)
OFF S1 SC COARSE
VR 505 H. PHASE
VR 601 SC FINE
TP5 (GND)
VR 701 VF PEAKING LEVEL
VR 407 R – Y C.BAL 2
P.SE board
CN52
1: G1
2: G2
3: +9V
4: +9V
5: +2.5V
6: –5V
7: –9V
8: +19V
9: +19V
10: CHD
GND
VR1 HP
VR3 CP
VR2 SHP
TP1
Eoo VR4
DR board
VR 101 B V SUB
VR 201 G V SUB
VR 301 R V SUB
GENLOCK INPUT
Side toward left side cover
Side toward right side cover

SECTION 3
CHARTS AND DIAGRAMS

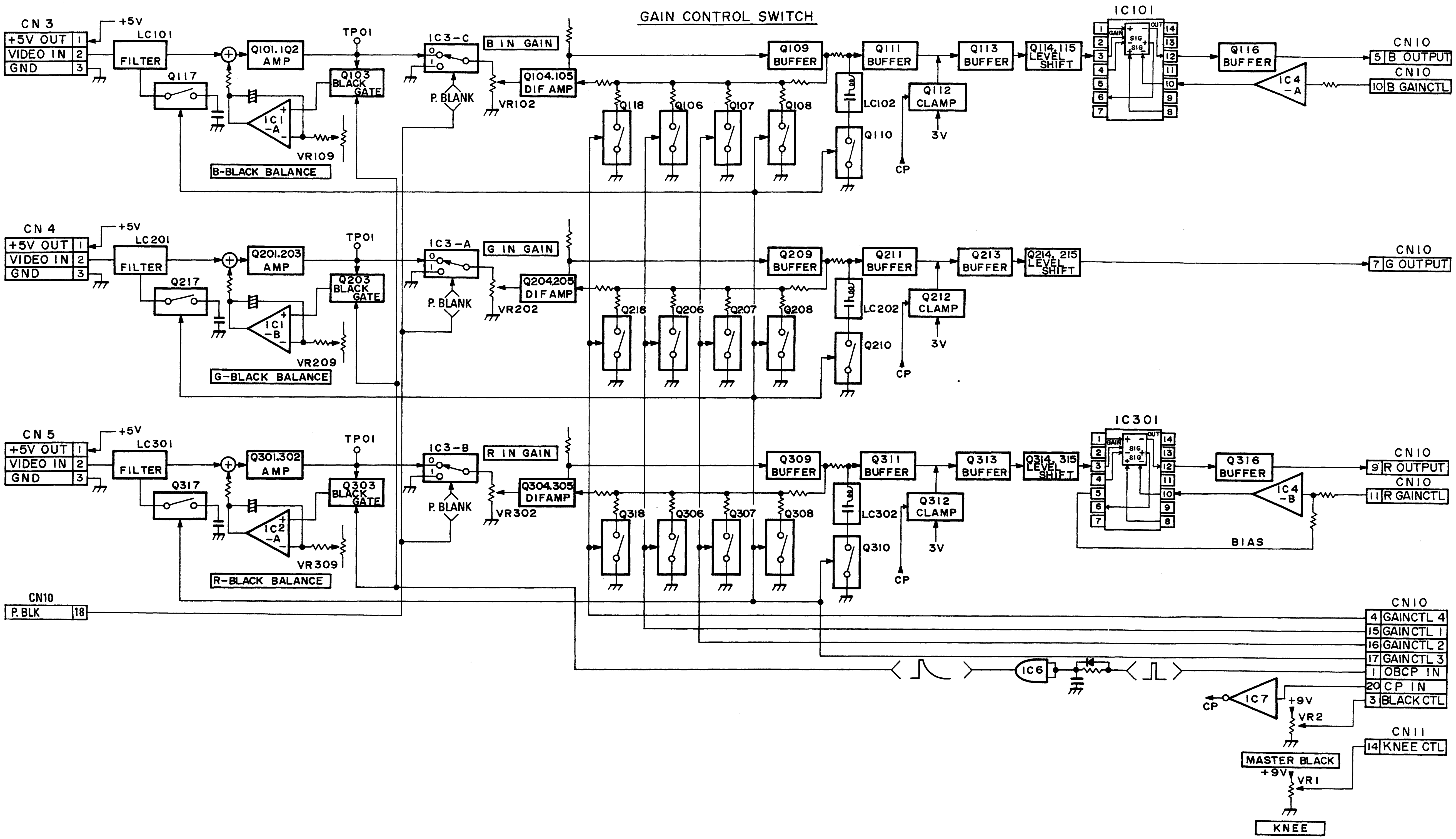
3.1 DR BOARD BLOCK DIAGRAM


CN9
GAIN CTL 11
+19V IN 16
-9V IN 19
HD IN 7
VD IN 9
P BLK OUT 8
OD CP OUT 10
SHUTTERCLK 13
SHUTTERDATA 14
IC3 +15V REG
+15V
Q1 BIAS DRIVE
-9V
1/2 COUNT DOWN
(D7) (C) RESET
(D3) IC5
VR1 HP
IC8-F
IC8-E
IC8-D
IC9-C
IC9-D
IC9-A
IC9-B
IC7-B
IC8-A
IC8-B
VR2 SHP
IC8-C
VR3 CP
IC7-A
IC10-B
IC10-C
IC10-D
Q102,Q103 RESET P. DRIVER
Q202,Q203 RESET P. DRIVER
Q302,Q303 RESET P. DRIVER
B VSUB BIAS Q101
+19V
VR101 B VSUB
IC12-A
IC1
CLD(4fsc)
SHP
RG
1/2
DOWN COUNTER TIMING PULSE GEN
HD INITIALIZE
VD INITIALIZE
CCD V DRIVE PULSE GEN
CCD H DRIVE PULSE GEN
SHUTTER PULSE CTL
P BLK
OB CP
EO2
EO1
EO0
H1
H2
VR4 EO0
-9V
IC11
X1
IC12-C
TP1
IC12-E
SSG HD
SSG VD
V2 COUNT DOWN
DOWN COUNTER
LATCH
PHASE COMPARATOR
EO
5 STEP S/R
VD
IC12-B
IC2
V1-V4, TG
V DRIVE PULSE
IC101
IC201
IC301
IC102 V. DRIVER
SUB OUT PUT
VL
V2 OUT PUT
V1 OUTPUT
V1 with CH1 PULSE DRIVER
V3 with CH2 PULSE DRIVER
LEVEL CON VERTOR
V1 INPUT
CH 1
V2 INPUT
SUB INPUT
V4 OUTPUT
V3 OUTPUT
VH
V3 IN PUT
CH2
V4 INPUT
Q201 G V SUB BIAS
+19V
VR201 G V SUB
IC202 SAME AS ABOVE
SUB V1 V2 V3 V4
Q301 R V SUB BIAS
+19V
VR301 R V SUB
IC302 SAME AS ABOVE
SUB V1 V2 V3 V4
CN6
2 Bch φR
3 Bch Vsub
4 φ Vsub
5 V1
6 V2
7 V3
8 V4
9 CP
10 SHP
12 VL
13 H1
14 H2
-9V
CN7
2 Gch φR
3 Gch Vsub
4 φ Vsub
5 V1
6 V2
7 V3
8 V4
9 CP
10 SHP
11 HP
12 VL
13 H1
14 H2
-9V
CN8
2 Rch φR
3 Rch Vsub
4 φ Vsub
5 V1
6 V2
7 V3
8 V4
9 CP
10 SHP
12 VL
13 H1
14 H2
-9V

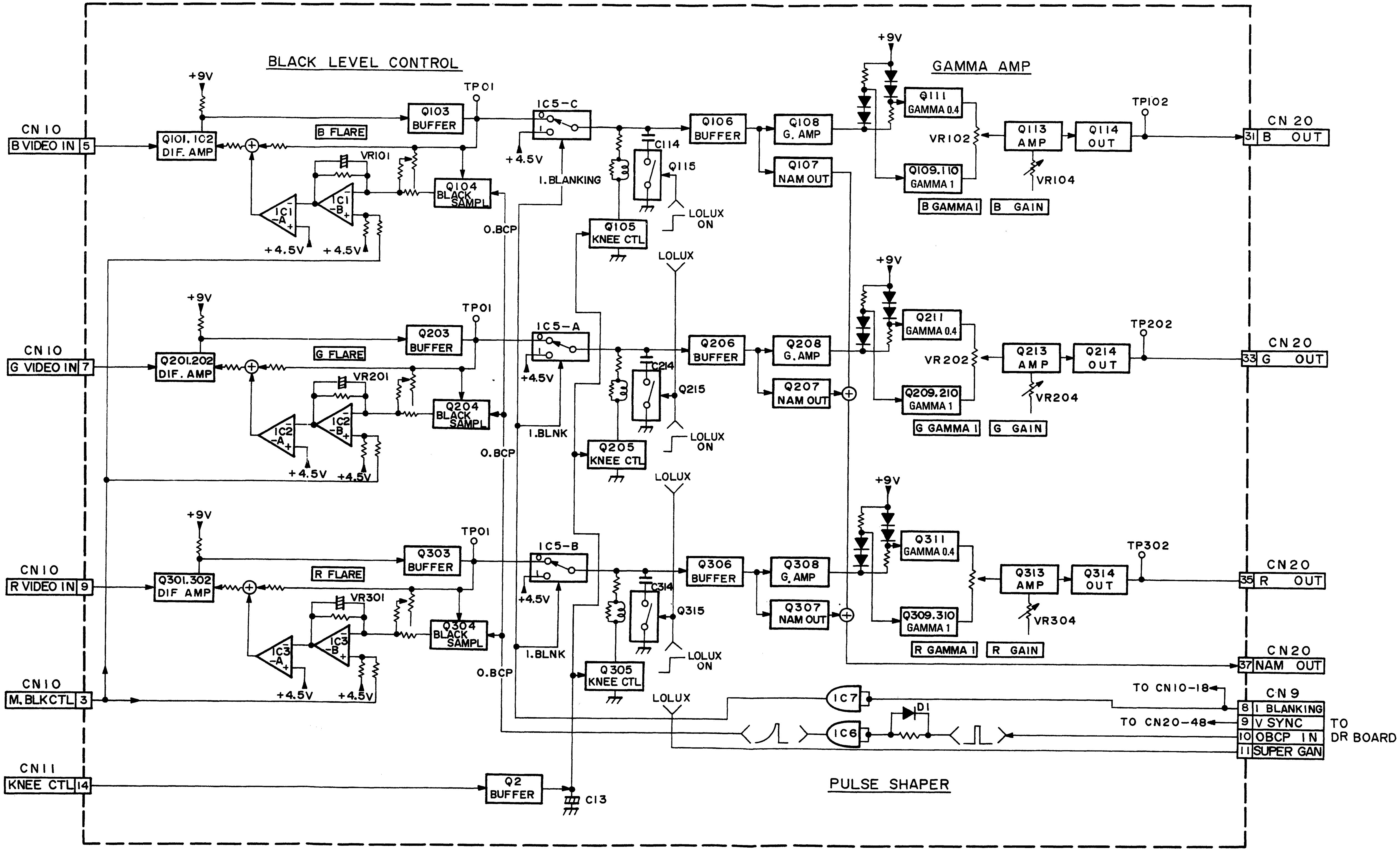
3.2 IS BOARD BLOCK DIAGRAM


IS
B/R CHANNEL
G CHANNEL ONLY
IC 1
CCD IMAGE SENSOR
H and V CCD
FDA
Q1,Q2
BUFFER
TP1
C10,Q3
FEED THROUGH CLAMP
H
L
1.6V
Q4,Q5
BUFFER
Q6,C13
SAMPLE AND HOLD
L
H
Q7,Q8
BUFFER
Q9,C14
HALF PITCH DELAY (SAMPLE AND HOLD)
L
H
Q10,Q11
BUFFER
CN3,CN4,CN5
2 VIDEO OUT
V SUB
V DRIVE
H DRIVE
RESET PULSE
CN6,7,8
3 VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1
9 φH2
10 φH2L
2 φR
CN6,7,8
12 CP
CN6,7,8
11 SHP
CN7
13 HP
VIDEO SIGNAL
1.6V
OUTPUT VIDEO
CP
SHP

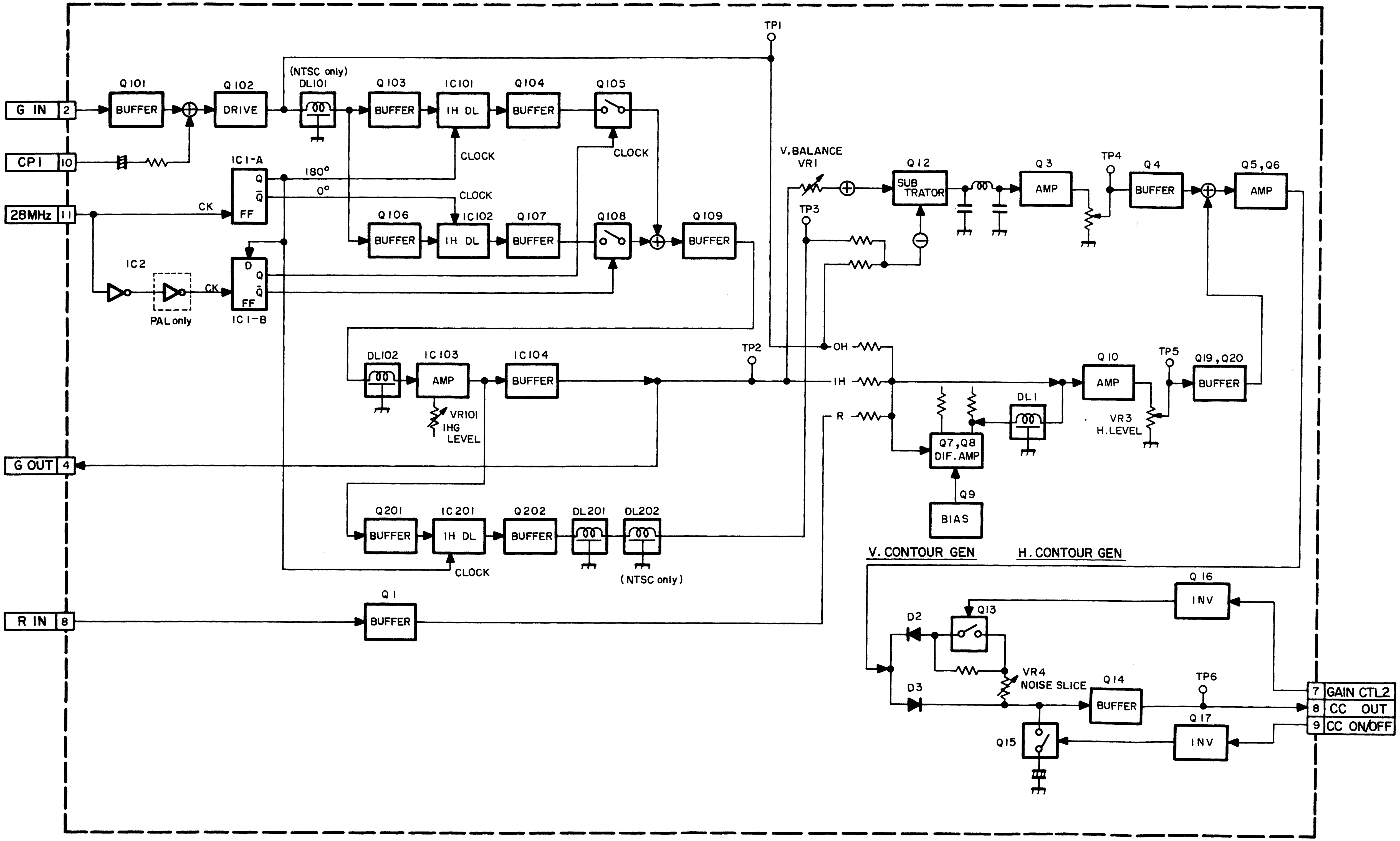
3.3 PA BOARD BLOCK DIAGRAM


GAIN CONTROL SWITCH
CN 3
+5V OUT 1
VIDEO IN 2
GND 3
+5V
LC101
FILTER
Q117
Q101.1Q2 AMP
TP01
Q103 BLACK GATE
IC1 -A
VR109
B-BLACK BALANCE
IC3-C
B IN GAIN
P. BLANK
VR102
Q104.105 DIF AMP
Q118
Q106
Q107
Q108
Q109 BUFFER
LC102
Q110
CP
Q111 BUFFER
Q112 CLAMP
3V
Q113 BUFFER
Q114.115 LEVEL SHIFT
IC101
GAIN
SIG
OUT
Q116 BUFFER
IC4 -A
CN10
5 B OUTPUT
10 B GAINCTL
CN 4
LC201
Q217
Q201.203 AMP
Q203 BLACK GATE
IC1 -B
VR209
G-BLACK BALANCE
IC3-A
G IN GAIN
VR202
Q204.205 DIF AMP
Q218
Q206
Q207
Q208
Q209 BUFFER
LC202
Q210
Q211 BUFFER
Q212 CLAMP
Q213 BUFFER
Q214. 215 LEVEL SHIFT
7 G OUTPUT
CN 5
LC301
Q317
Q301.302 AMP
Q303 BLACK GATE
IC2 -A
VR309
R-BLACK BALANCE
IC3-B
R IN GAIN
VR302
Q304.305 DIFAMP
Q318
Q306
Q307
Q308
Q309 BUFFER
LC302
Q310
Q311 BUFFER
Q312 CLAMP
Q313 BUFFER
Q314. 315 LEVEL SHIFT
IC301
Q316 BUFFER
IC4 -B
9 R OUTPUT
11 R GAINCTL
BIAS
P. BLK 18
4 GAINCTL 4
15 GAINCTL 1
16 GAINCTL 2
17 GAINCTL 3
1 OBCP IN
20 CP IN
3 BLACK CTL
IC6
IC7
+9V
VR2
MASTER BLACK
VR1
KNEE
CN11
14 KNEE CTL

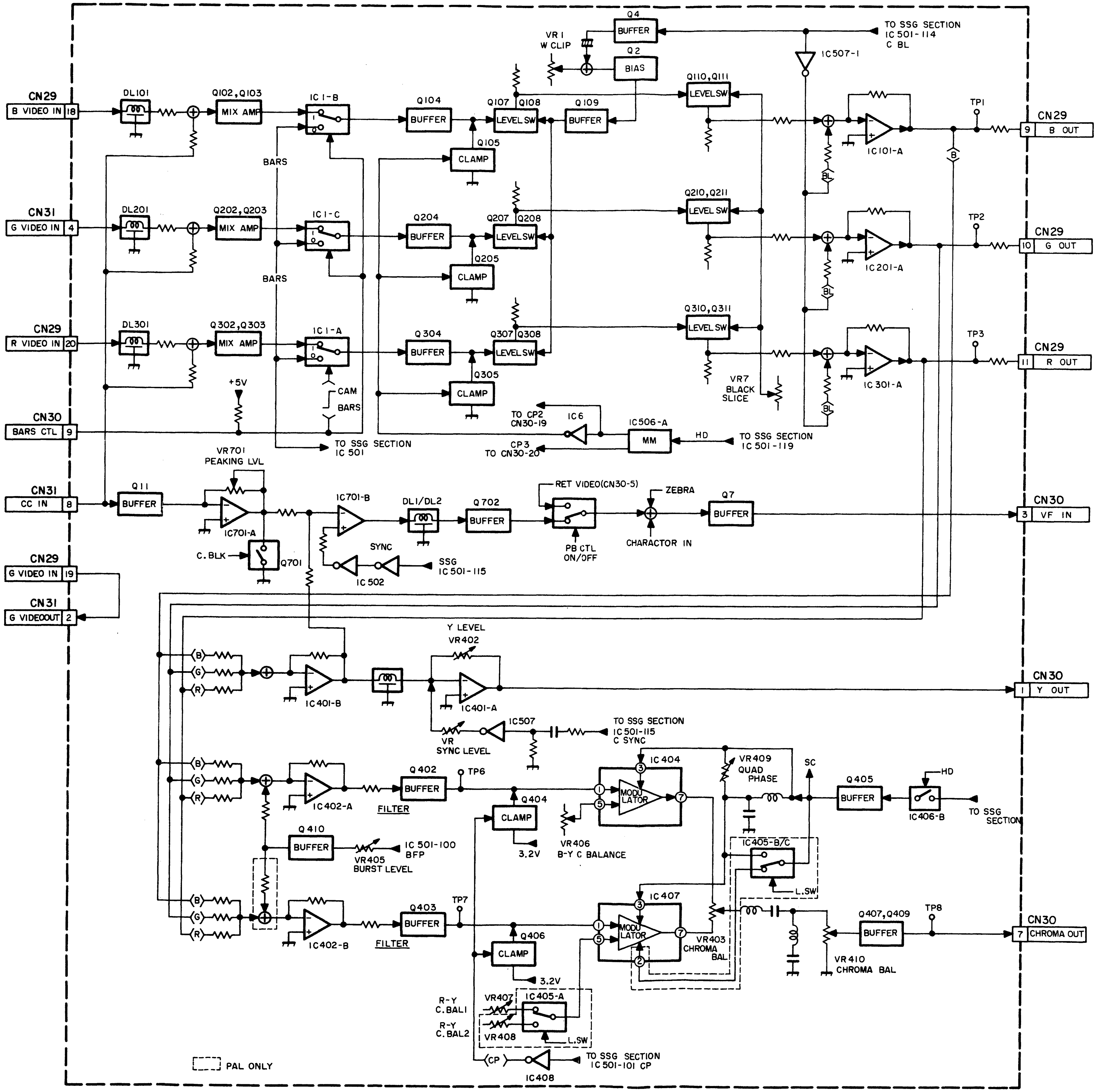
3.4 PR BOARD BLOCK DIAGRAM


BLACK LEVEL CONTROL
GAMMA AMP
PULSE SHAPER
CN10
B VIDEO IN 5
G VIDEO IN 7
R VIDEO IN 9
M. BLKCTL 3
CN11
KNEE CTL 14
+9V
+4.5V
TP01
TP102
TP202
TP302
Q101, IC2 DIF. AMP
Q201.202 DIF. AMP
Q301.302 DIF AMP
B FLARE
G FLARE
R FLARE
VR101
VR201
VR301
IC1 -A
IC1 -B
IC2 -A
IC2 -B
IC3 -A
IC3 -B
Q103 BUFFER
Q203 BUFFER
Q303 BUFFER
Q104 BLACK SAMPL
Q204 BLACK SAMPL
Q304 BLACK SAMPL
O.BCP
IC5-C
IC5-A
IC5-B
I. BLANKING
I.BLNK
C114
C214
C314
Q115
Q215
Q315
LOLUX ON
LOLUX
Q105 KNEE CTL
Q205 KNEE CTL
Q305 KNEE CTL
Q106 BUFFER
Q206 BUFFER
Q306 BUFFER
Q108 G. AMP
Q208 G. AMP
Q308 G. AMP
Q107 NAM OUT
Q207 NAM OUT
Q307 NAM OUT
Q111 GAMMA 0.4
Q211 GAMMA 0.4
Q311 GAMMA 0.4
Q109.110 GAMMA 1
Q209.210 GAMMA 1
Q309.310 GAMMA 1
VR102
VR202
Q113 AMP
Q213 AMP
Q313 AMP
Q114 OUT
Q214 OUT
Q314 OUT
VR104
VR204
VR304
B GAMMA I
B GAIN
G GAMMA I
G GAIN
R GAMMA I
R GAIN
CN 20
31 B OUT
33 G OUT
35 R OUT
37 NAM OUT
CN9
8 I BLANKING
9 V SYNC
10 OBCP IN
11 SUPER GAN
TO CN10-18
TO CN20-48
TO DR BOARD
IC7
IC6
D1
Q2 BUFFER
C13

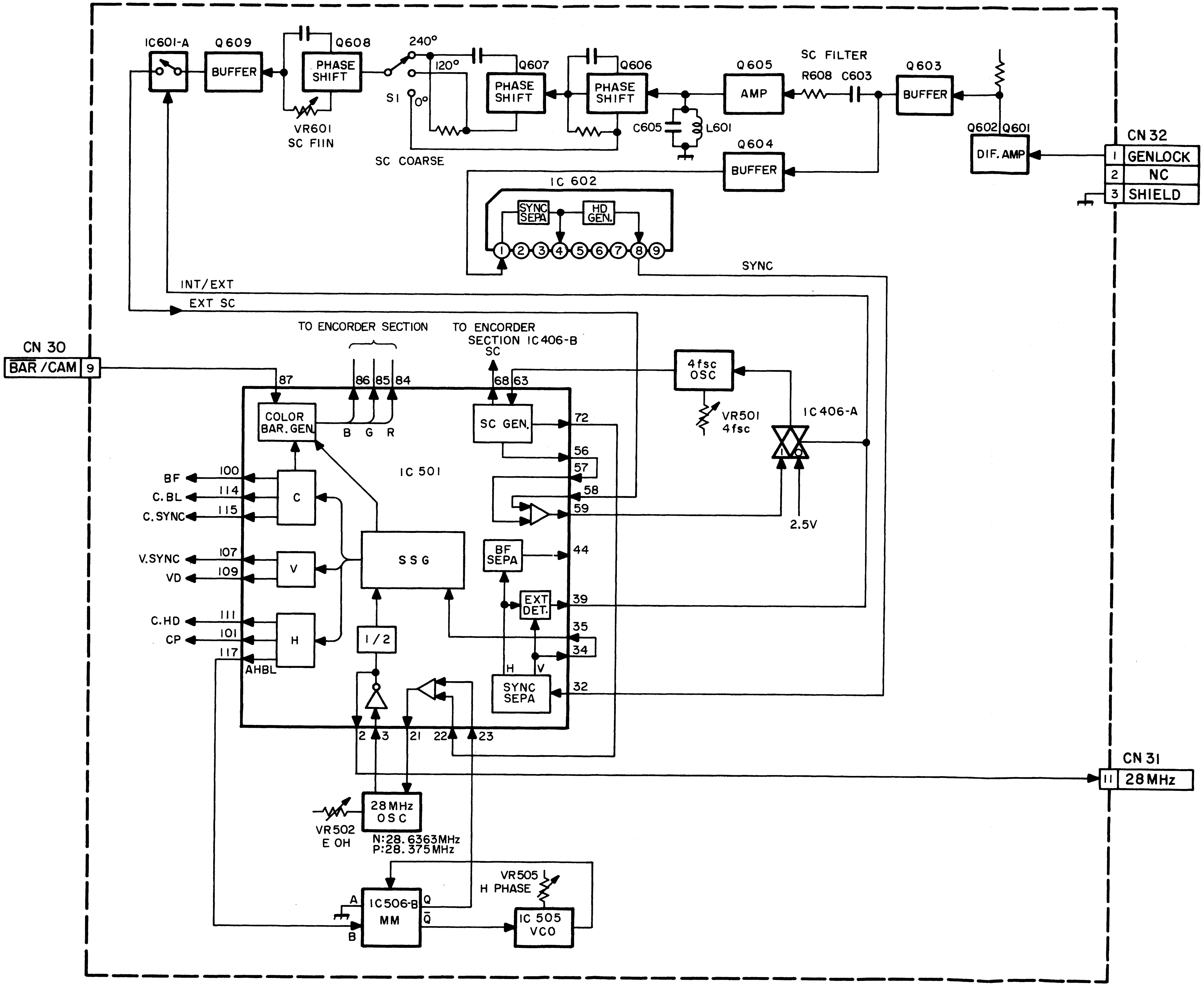
3.5 CC BOARD BLOCK DIAGRAM


G IN 2
CP1 10
28MHz 11
G OUT 4
R IN 8
Q101 BUFFER
Q102 DRIVE
(NTSC only) DL101
Q103 BUFFER
IC101 1H DL
Q104 BUFFER
Q105
CLOCK
CLOCK
IC1-A
Q
Q̄
FF
CK
180°
0°
CLOCK
Q106 BUFFER
IC102 1H DL
Q107 BUFFER
Q108
Q109 BUFFER
IC2
PAL only
CK
D
Q
Q̄
FF
IC1-B
TP1
DL102
IC103 AMP
IC104 BUFFER
VR101 1HG LEVEL
TP2
Q201 BUFFER
IC201 1H DL
Q202 BUFFER
DL201
DL202
CLOCK
(NTSC only)
Q1 BUFFER
V.BALANCE VR1
TP3
Q12 SUB TRATOR
Q3 AMP
TP4
Q4 BUFFER
Q5,Q6 AMP
0H
1H
R
Q10 AMP
TP5
Q19,Q20 BUFFER
DL1
VR3 H.LEVEL
Q7,Q8 DIF.AMP
Q9 BIAS
V.CONTOUR GEN
H.CONTOUR GEN
Q16 INV
D2
Q13
VR4 NOISE SLICE
D3
Q14 BUFFER
TP6
Q17 INV
Q15
7 GAIN CTL2
8 CC OUT
9 CC ON/OFF

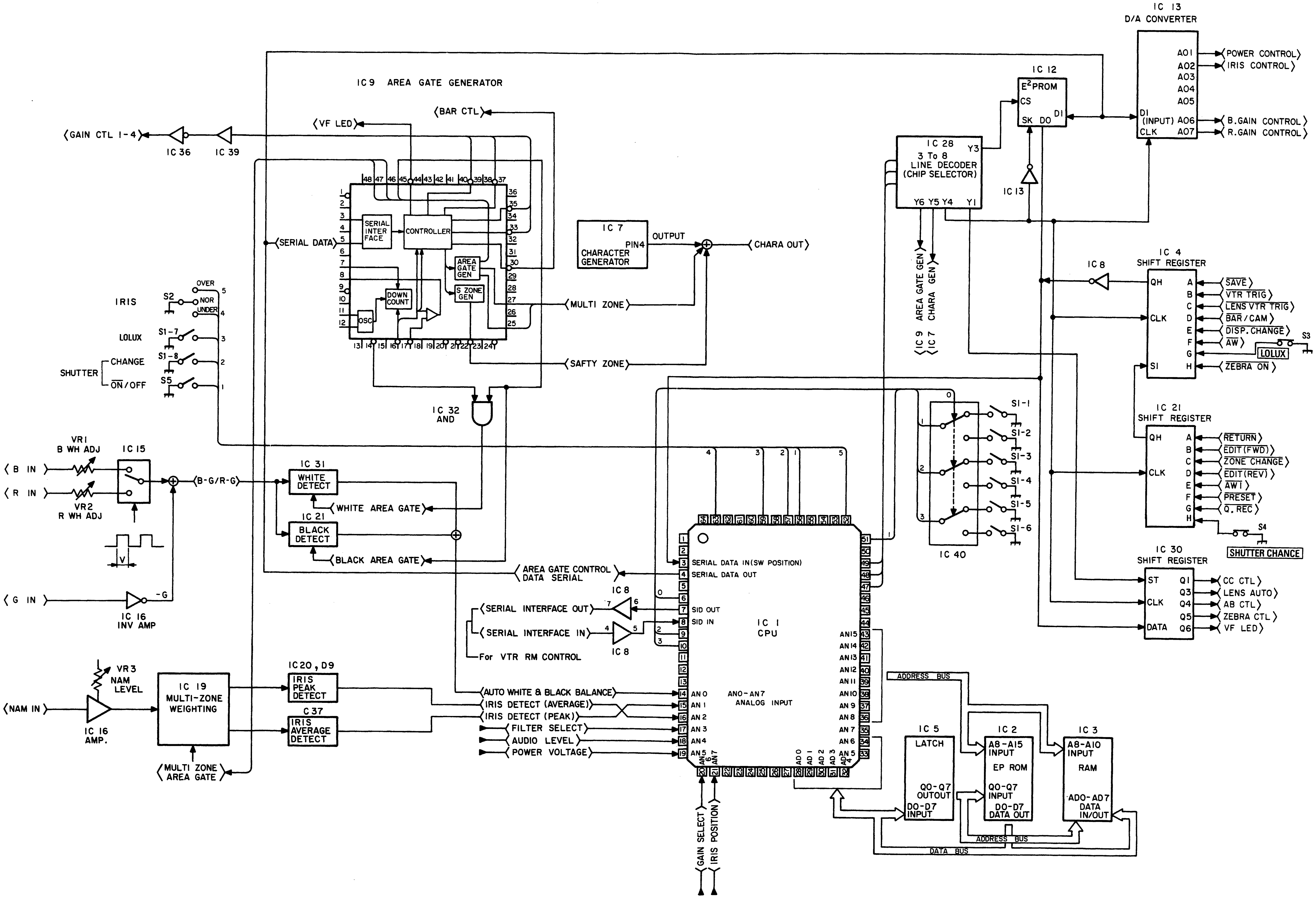
3.6 SE BOARD (Color Encoder section) BLOCK DIAGRAM


CN29
B VIDEO IN 18
CN31
G VIDEO IN 4
CN29
R VIDEO IN 20
CN30
BARS CTL 9
CN31
CC IN 8
CN29
G VIDEO IN 19
CN31
G VIDEOOUT 2
DL101
DL201
DL301
Q102,Q103
MIX AMP
Q202,Q203
MIX AMP
Q302,Q303
MIX AMP
IC1-B
IC1-C
IC1-A
BARS
BARS
CAM
BARS
+5V
TO SSG SECTION
IC 501
Q104
BUFFER
Q204
BUFFER
Q304
BUFFER
Q105
CLAMP
Q205
CLAMP
Q305
CLAMP
Q107 Q108
LEVEL SW
Q207 Q208
LEVEL SW
Q307 Q308
LEVEL SW
Q109
BUFFER
Q4
BUFFER
Q2
BIAS
VR1
W CLIP
TO SSG SECTION
IC 501-114
C BL
IC507-1
Q110,Q111
LEVEL SW
Q210,Q211
LEVEL SW
Q310,Q311
LEVEL SW
VR7
BLACK
SLICE
BL
IC101-A
IC201-A
IC301-A
TP1
TP2
TP3
B
CN29
9 B OUT
CN29
10 G OUT
CN29
11 R OUT
TO CP2
CN30-19
IC6
IC506-A
MM
HD
TO SSG SECTION
IC 501-119
CP3
TO CN30-20
VR701
PEAKING LVL
Q11
BUFFER
IC701-A
C.BLK
Q701
IC701-B
SYNC
IC 502
SSG
IC 501-115
DL1/DL2
Q702
BUFFER
RET VIDEO(CN30-5)
PB CTL
ON/OFF
ZEBRA
CHARACTOR IN
Q7
BUFFER
CN30
3 VF IN
B
G
R
IC401-B
Y LEVEL
VR402
IC401-A
CN30
1 Y OUT
IC507
VR
SYNC LEVEL
TO SSG SECTION
IC 501-115
C SYNC
IC402-A
FILTER
Q402
BUFFER
TP6
Q404
CLAMP
3.2V
VR406
B-Y C BALANCE
IC 404
MODU LATOR
VR409
QUAD
PHASE
SC
Q405
BUFFER
IC406-B
HD
TO SSG SECTION
Q410
BUFFER
VR405
BURST LEVEL
IC 501-100
BFP
IC405-B/C
L.SW
IC402-B
FILTER
Q403
BUFFER
TP7
Q406
CLAMP
3.2V
IC407
MODU LATOR
VR403
CHROMA
BAL
Q407,Q409
BUFFER
TP8
VR410
CHROMA BAL
CN30
7 CHROMA OUT
R-Y
C.BAL1
R-Y
C.BAL2
VR407
VR408
IC405-A
L.SW
CP
IC408
TO SSG SECTION
IC 501-101 CP
PAL ONLY

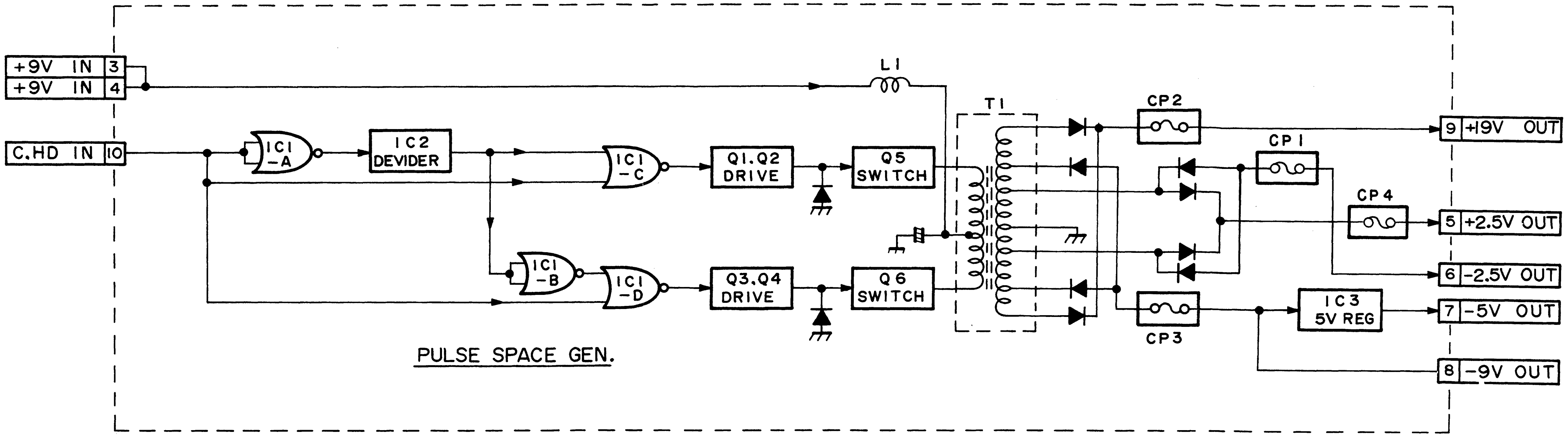
3.7 SE BOARD (SSG section) BLOCK DIAGRAM


IC601-A
Q609
BUFFER
Q608
PHASE SHIFT
VR601
SC FIIN
240°
120°
S1
0°
SC COARSE
Q607
PHASE SHIFT
Q606
PHASE SHIFT
C605
L601
Q605
AMP
SC FILTER
R608
C603
Q603
BUFFER
Q604
BUFFER
Q602 Q601
DIF. AMP
CN 32
1 GENLOCK
2 NC
3 SHIELD
IC 602
SYNC SEPA
HD GEN.
1 2 3 4 5 6 7 8 9
SYNC
INT/EXT
EXT SC
TO ENCORDER SECTION
TO ENCORDER SECTION IC406-B
SC
CN 30
BAR/CAM 9
87
86 85 84
68 63
COLOR BAR. GEN
B G R
SC GEN.
72
56
57
58
59
IC 501
4fsc OSC
VR501 4fsc
IC406-A
2.5V
BF
C.BL
C.SYNC
100
114
115
C
V.SYNC
VD
107
109
V
SSG
BF SEPA
44
EXT DET.
39
35
34
C.HD
CP
111
101
117
AHBL
H
1/2
H
V
SYNC SEPA
32
2 3 21 22 23
CN 31
11 28MHz
28MHz OSC
VR502
E OH
N:28.6363MHz
P:28.375MHz
VR505
H PHASE
A
IC506-B
MM
B
Q
Q̄
IC 505
VCO

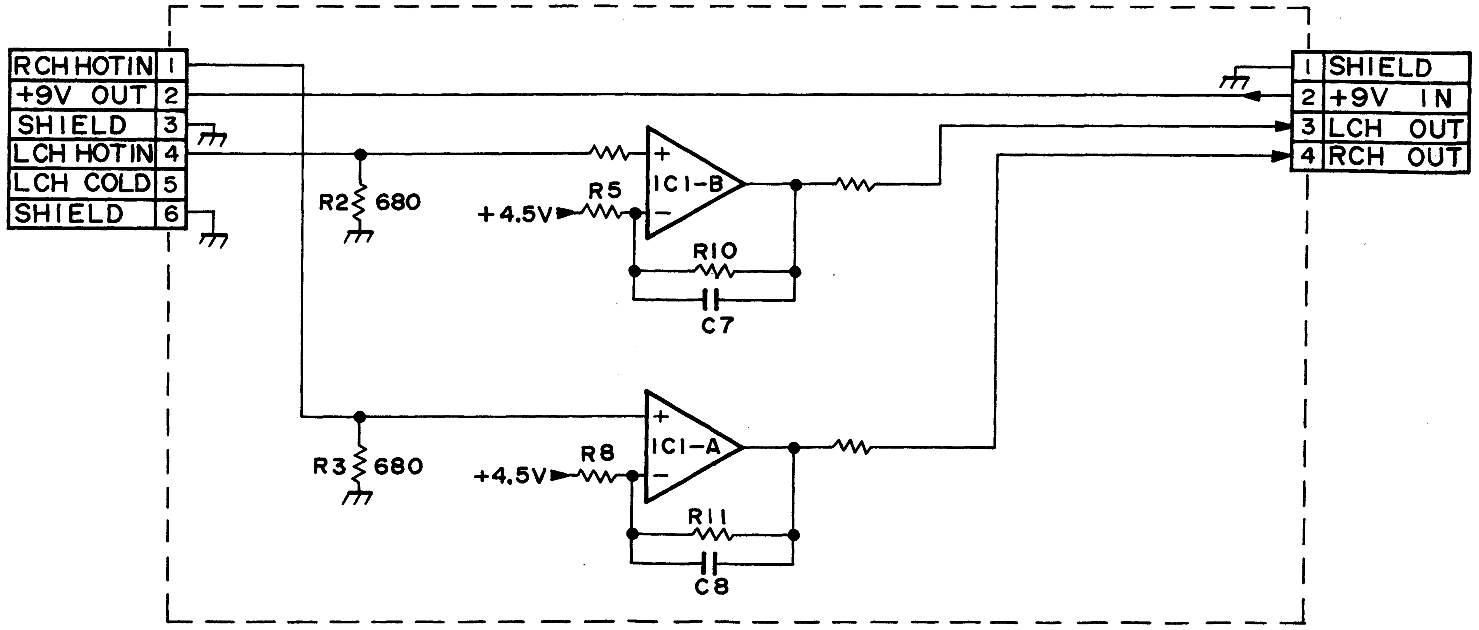
3.8 CP BOARD BLOCK DIAGRAM


IC 13
D/A CONVERTER
AO1
AO2
AO3
AO4
AO5
DI (INPUT)
CLK
AO6
AO7
POWER CONTROL
IRIS CONTROL
B.GAIN CONTROL
R.GAIN CONTROL
IC 12
E²PROM
CS
SK DO
DI
IC 28
3 To 8
LINE DECODER
(CHIP SELECTOR)
Y3
Y6 Y5 Y4 Y1
IC 13
IC 9 AREA GATE GENERATOR
BAR CTL
VF LED
GAIN CTL 1-4
IC 36
IC 39
SERIAL INTER FACE
CONTROLLER
DOWN COUNT
OSC
AREA GATE GEN
S ZONE GEN
SERIAL DATA
IC 7
CHARACTER GENERATOR
PIN4
OUTPUT
CHARA OUT
MULTI ZONE
SAFTY ZONE
AREA GATE GEN
CHARA GEN
IC 9
IC 7
IC 8
IC 4
SHIFT REGISTER
QH
CLK
SI
A
B
C
D
E
F
G
H
SAVE
VTR TRIG
LENS VTR TRIG
BAR/CAM
DISP. CHANGE
AW
LOLUX
ZEBRA ON
S3
IRIS
S2
OVER
NOR
UNDER
LOLUX
S1-7
S1-8
SHUTTER
CHANGE
ON/OFF
S5
IC 32
AND
S1-1
S1-2
S1-3
S1-4
S1-5
S1-6
IC 40
IC 21
SHIFT REGISTER
RETURN
EDIT(FWD)
ZONE CHANGE
EDIT(REV)
AW1
PRESET
Q. REC
S4
SHUTTER CHANCE
VR1
B WH ADJ
IC 15
B IN
R IN
VR2
R WH ADJ
B-G/R-G
IC 31
WHITE DETECT
WHITE AREA GATE
IC 21
BLACK DETECT
BLACK AREA GATE
V
G IN
-G
IC 16
INV AMP
AREA GATE CONTROL
DATA SERIAL
SERIAL DATA IN(SW POSITION)
SERIAL DATA OUT
IC 8
SERIAL INTERFACE OUT
SERIAL INTERFACE IN
SID OUT
SID IN
IC 1
CPU
IC 8
For VTR RM CONTROL
IC 30
SHIFT REGISTER
ST
CLK
DATA
Q1
Q3
Q4
Q5
Q6
CC CTL
LENS AUTO
AB CTL
ZEBRA CTL
VF LED
VR3
NAM LEVEL
NAM IN
IC 16
AMP.
IC 19
MULTI-ZONE WEIGHTING
MULTI ZONE
AREA GATE
IC20, D9
IRIS PEAK DETECT
C 37
IRIS AVERAGE DETECT
AUTO WHITE & BLACK BALANCE
IRIS DETECT (AVERAGE)
IRIS DETECT (PEAK)
FILTER SELECT
AUDIO LEVEL
POWER VOLTAGE
AN 0
AN 1
AN 2
AN 3
AN4
AN5
AN6
AN7
AN0-AN7
ANALOG INPUT
AN15
AN14
AN13
AN12
AN11
AN10
AN 9
AN 8
AN 7
AN 6
AN 5
AD0
AD1
AD2
AD3
AD4
GAIN SELECT
IRIS POSITION
ADDRESS BUS
IC 5
LATCH
Q0-Q7
OUTOUT
D0-D7
INPUT
IC 2
A8-A15
INPUT
EP ROM
Q0-Q7
INPUT
D0-D7
DATA OUT
IC 3
A8-A10
INPUT
RAM
AD0-AD7
DATA
IN/OUT
ADDRESS BUS
DATA BUS

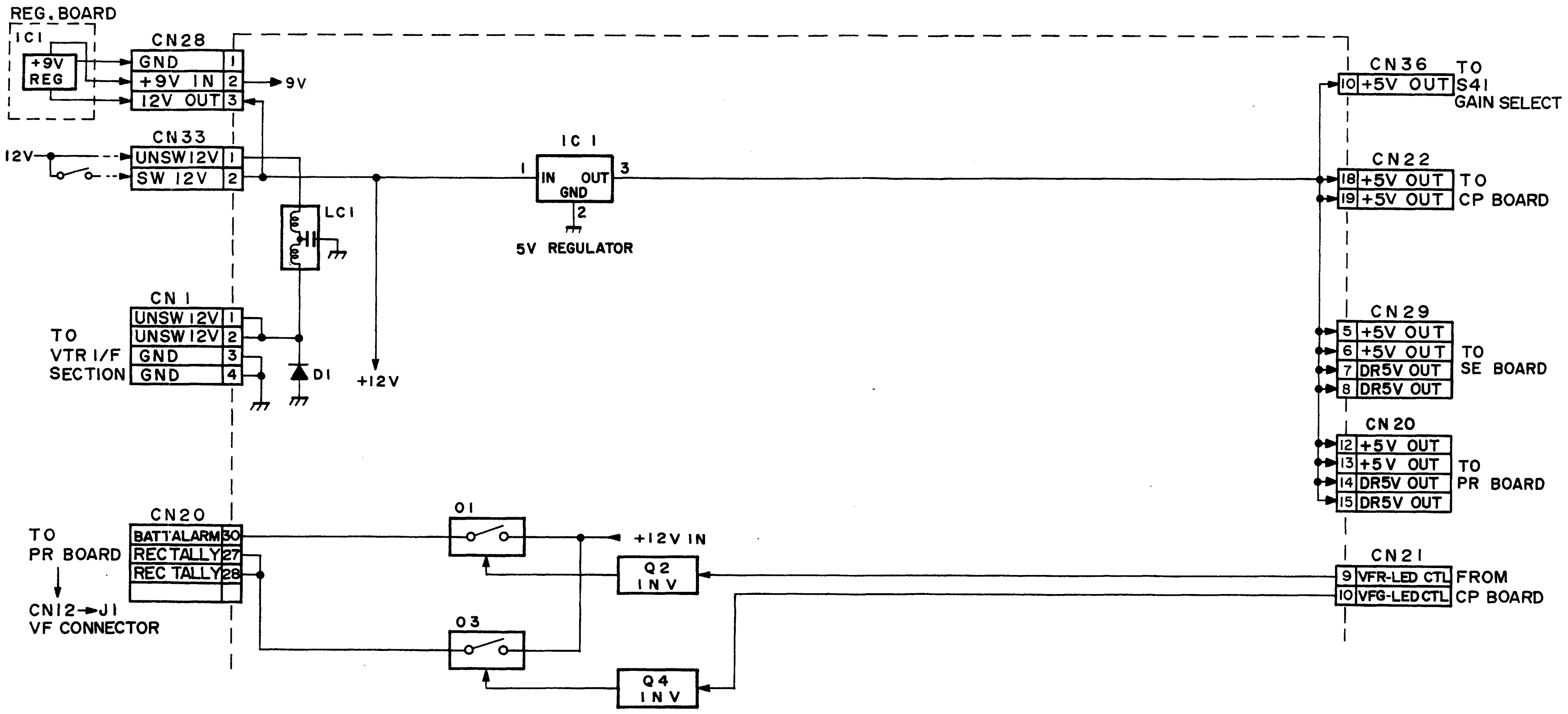
3.9 PS BOARD BLOCK DIAGRAM


+9V IN 3
+9V IN 4
C.HD IN 10
IC1 -A
IC2 DEVIDER
IC1 -C
IC1 -B
IC1 -D
Q1.Q2 DRIVE
Q3.Q4 DRIVE
Q5 SWITCH
Q6 SWITCH
L1
T1
CP2
CP1
CP4
CP3
IC3 5V REG
9 +19V OUT
5 +2.5V OUT
6 -2.5V OUT
7 -5V OUT
8 -9V OUT
PULSE SPACE GEN.

3.10 AU BORD BLOCK DIAGRAM


RCH HOTIN 1
+9V OUT 2
SHIELD 3
LCH HOTIN 4
LCH COLD 5
SHIELD 6
R2 680
R3 680
+4.5V
R5
R8
IC1-B
IC1-A
R10
C7
R11
C8
1 SHIELD
2 +9V IN
3 LCH OUT
4 RCH OUT

3.11 MT BOARD BLOCK DIAGRAM


REG. BOARD
IC1
+9V REG
CN28
GND 1
+9V IN 2
12V OUT 3
9V
CN33
12V
UNSW12V 1
SW 12V 2
LC1
IC 1
1
IN OUT
GND
3
2
5V REGULATOR
CN 1
TO VTR I/F SECTION
UNSW 12V 1
UNSW 12V 2
GND 3
GND 4
D1
+12V
CN20
TO PR BOARD
CN12→J1 VF CONNECTOR
BATT ALARM 30
REC TALLY 27
REC TALLY 28
Q1
+12V IN
Q2 INV
Q3
Q4 INV
CN36
10 +5V OUT
TO S41 GAIN SELECT
CN22
18 +5V OUT
19 +5V OUT
TO CP BOARD
CN29
5 +5V OUT
6 +5V OUT
7 DR5V OUT
8 DR5V OUT
TO SE BOARD
CN 20
12 +5V OUT
13 +5V OUT
14 DR5V OUT
15 DR5V OUT
TO PR BOARD
CN21
9 VFR-LED CTL
10 VFG-LED CTL
FROM CP BOARD

■ SCHEMATIC DIAGRAM NOTES

- **Schematic safety precaution**

⚠ Parts are safety related parts.
When replacing them, be sure to use the specified parts.

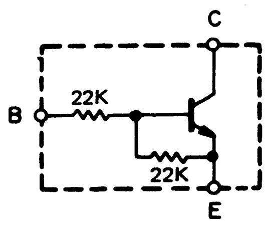
Voltage and waveform measurements.
Voltage: Measured with digital voltmeter in DC range; iris closed.
Waveform: Grey scale illuminated at more than 4000 lux at 3200 K lighting.

- Terminal logic

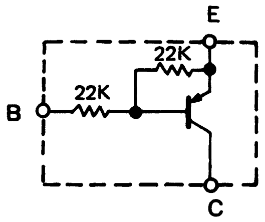
Top bar of terminal name show input or output logic.
Top bar shows, the control circuit become active at negative (low) logic input for example.

- Digital transistors

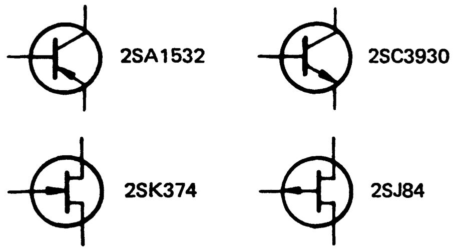
DTC124EU



DTA124EU



- Unless otherwise specified transistors and F.E.T.s are:

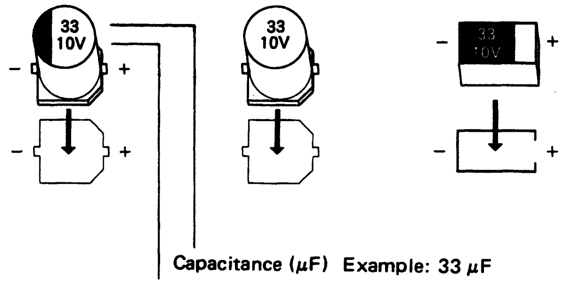


- Definistion of the (A) and the (B) or circuit boards diagrams
  (A) : Side on which discrete parts are assembled
  (B) : Side on which only chip parts are assembled.

■ REPLACING SUBMINIATURE "CHIP" PARTS

- Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Chip resistors used in some circuits are of high precision type having little error in resistance.
  To demonstrate the full capacity of this camera head, place an order for proper parts referring to the diagrams and parts lists in the sections 6.
- Soldering cautions:
  1) Do not apply heat for more than 3 seconds.
  2) Avoid using a rubbing stroke when soldering.
  3) Discard removed chips; do not reuse them.
  4) Supplementary cementing is not required.
  5) Use care not to scratch or otherwise damage the chips.
- Resistors and capacitors are not interchangeable with chip parts which are used in the color video cameras BY-110, KY-210, etc., because of difference in size. In case of order for parts, refer to the section 6 "ELECTRICAL PARTS LIST".
- Polarities of chip electrolytic capacitors and chip tantalum capacitors used in this model are as illustrated below. Polarities indicated by silk-screen printing on P.C. boards are also shown below. When replacing such parts, make sure of polarities.

- Electrolytic capacitor
- Non-polarized electrolytic capacitor
- Tantalum capacitor



Capacitance (µF) Example: 33 µF
Dielectric strength (V) Example: 10 V

3.12 DR CIRCUIT BOARD

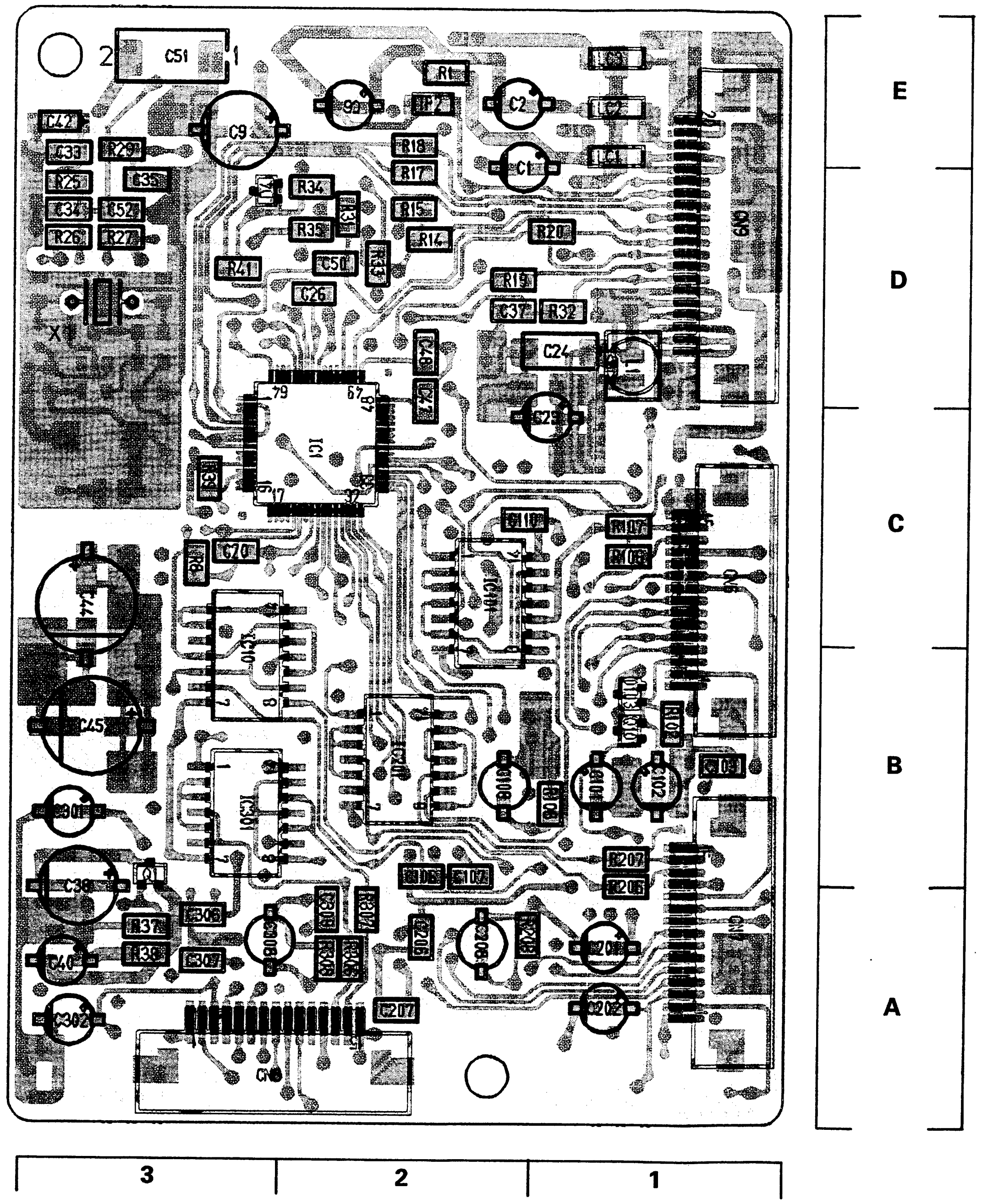
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

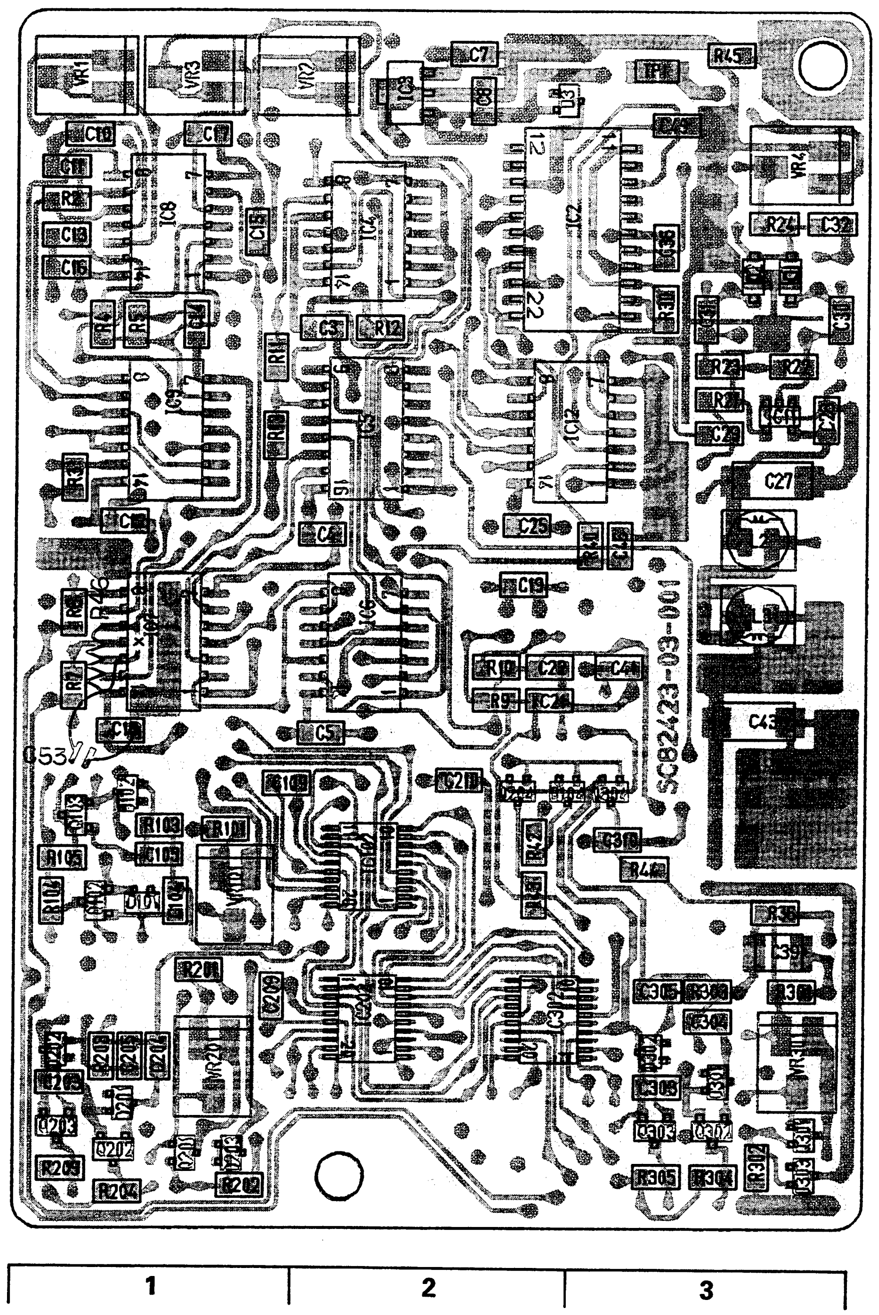
A-1C
Side — A
X axis — 1
Y axis — C

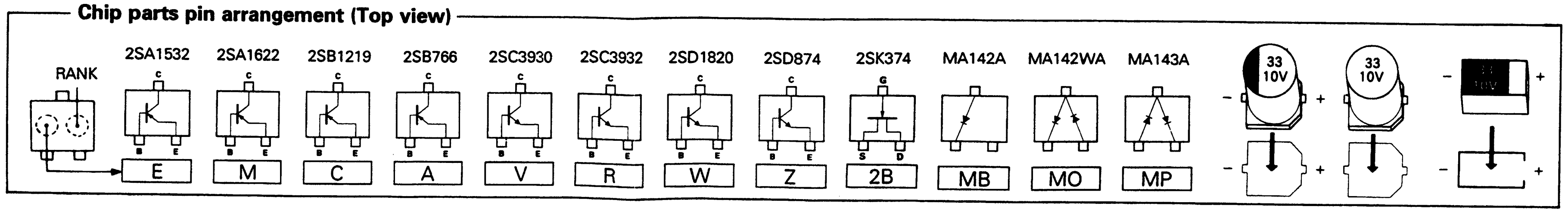
Part	Address
IC1	A- 2D
IC2	B- 2D
IC3	B- 2E
IC4	B- 2D
IC5	B- 2D
IC6	B- 2C
IC7	B- 1C
IC8	B- 1D
IC9	B- 1D
IC10	A- 3C
IC11	B- 3D
IC12	B- 2D
IC101	A- 2C
IC102	B- 2B
IC201	A- 2B
IC202	B- 2A
IC301	A- 3B
IC302	B- 2A
Q1	A- 3B
Q101	A- 1B
Q102	B- 1B
Q103	B- 1B
Q104	B- 2B
Q201	B- 1A
Q202	B- 1A
Q203	B- 1A
Q204	B- 2B
Q301	B- 3A
Q302	B- 3A
Q303	B- 3A
Q304	B- 3B
D1	B- 3D
D2	B- 3D
D3	B- 2E
D4	A- 3E
D101	B- 1B
D102	B- 1B
D103	A- 1B
D201	B- 1A
D202	B- 1A
D203	B- 1A
D301	B- 3A
D302	B- 3A
D303	B- 3A
R1	A- 2E
R2	B- 1E
R3	B- 1D
R4	B- 1D
R5	B- 1D
R6	B- 1C
R7	B- 1C
R8	A- 3C
R9	B- 2C
R10	B- 2C
R11	B- 1D
R12	B- 2D
R13	B- 1D
R14	A- 2D
R15	A- 2E
R17	A- 2E
R18	A- 2E
R19	A- 2D
R20	A- 1E
R21	B- 3D
R22	B- 3D
R23	B- 3D
R24	B- 3E
R25	A- 3E
R26	A- 3D
R27	A- 3D
R29	A- 3E
R30	B- 3D
R31	A- 2E
R32	A- 1D
R33	A- 2D
R34	A- 2E
R35	A- 2E
R36	B- 3B
R37	A- 3A
R38	A- 3A
R39	A- 3C
R40	B- 3C
R41	A- 3D
R42	B- 2B
R43	B- 2B
R44	B- 3B
R45	B- 3E
R101	B- 1B
R102	A- 1B
R103	B- 1B
R104	B- 1B
R105	B- 1B
R106	A- 1C
R107	A- 1C
R108	A- 1B
R201	B- 1B
R202	B- 1A
R203	B- 1A
R204	B- 1A
R205	B- 1A
R206	A- 1B
R207	A- 1B
R208	A- 2A
R301	B- 3A
R302	B- 3A
R303	B- 3A
R304	B- 3A
R305	B- 3A
R306	A- 2A
R307	A- 2A
R308	A- 2A
VR1	B- 1E
VR2	B- 2E
VR3	B- 1E
VR4	B- 3E
VR101	B- 1B
VR201	B- 1A
VR301	B- 3A
C1	A- 2E
C2	A- 2E
C3	B- 2D
C4	B- 2C
C5	B- 2C
C6	A- 2E
C7	B- 2E
C8	B- 2E
C9	A- 3E
C10	B- 1E
C11	B- 1E
C12	B- 1C
C13	B- 1E
C14	B- 1D
C15	B- 1E
C16	B- 1D
C17	B- 1E
C18	B- 1C
C19	B- 2C
C20	A- 3C
C21	B- 2C
C22	B- 2C
C23	A- 1D
C24	A- 1D
C25	B- 2C
C26	A- 2D
C27	B- 3D
C28	B- 3D
C29	B- 3D
C30	B- 3D
C31	B- 3D
C32	B- 3E
C33	A- 3E
C34	A- 3E
C35	A- 3E
C36	B- 3E
C37	A- 2D
C38	A- 3B
C39	B- 3B
C40	A- 3A
C41	B- 3C
C42	A- 3E
C43	B- 3C
C44	A- 3C
C45	A- 3B
C46	B- 3C
C47	A- 2D
C48	A- 2D
C49	B- 3E
C50	A- 2D
C51	A- 3E
C52	A- 3E
C101	A- 1B
C102	A- 1B
C103	A- 1B
C104	B- 1B
C105	B- 1B
C106	A- 2B
C107	A- 2B
C108	A- 2B
C109	B- 1B
C110	A- 2C
C201	A- 1A
C202	A- 1A
C203	B- 1A
C204	B- 1A
C205	B- 1A
C206	A- 2A
C207	A- 2A
C208	A- 2A
C209	B- 1A
C210	B- 2B
C301	A- 3B
C302	A- 3A
C303	B- 3A
C304	B- 3A
C305	B- 3A
C306	A- 3A
C307	A- 3A
C308	A- 3A
C309	A- 2A
C310	B- 3B
L1	A- 1D
L2	B- 3C
L3	B- 3C
TP1	B- 3E
TP2	A- 2E
LC1	A- 1E
LC2	A- 1E
LC3	A- 1E
CN6	A- 1C
CN7	A- 1A
CN8	A- 3A
CN9	A- 1E
X1	A- 3D

— Component Side (A) —


E
D
C
B
A
3
2
1
IC1
C51
C9
CN9
C45
C38
C40
C302
IC301
IC10
X1

— Soldered Side (B) —


1
2
3
VR1
VR2
VR3
VR4
IC2
IC8
IC12
C27
C43
SC82423-03-D01

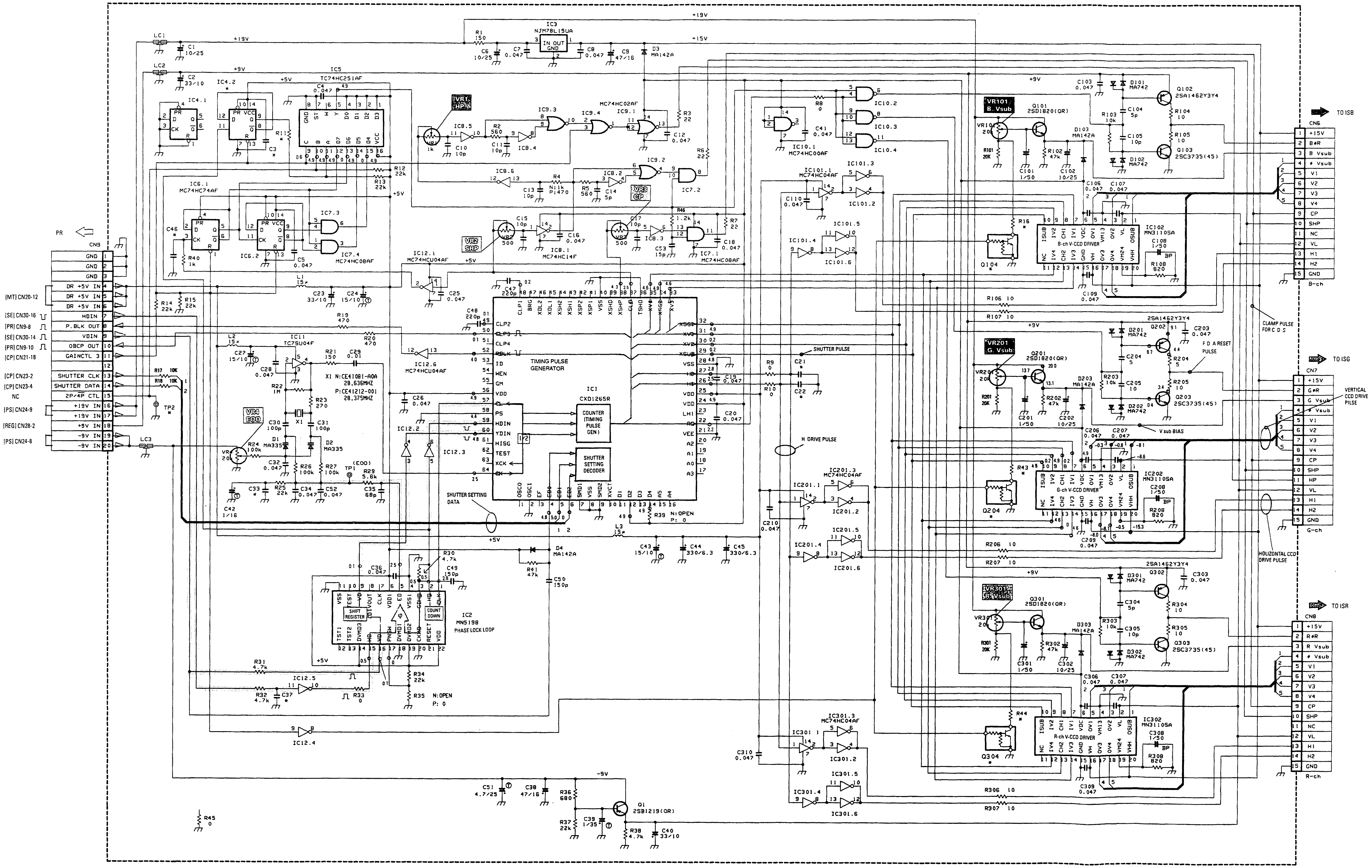

RANK
2SA1532
2SA1622
2SB1219
2SB766
2SC3930
2SC3932
2SD1820
2SD874
2SK374
MA142A
MA142WA
MA143A
E
M
C
A
V
R
W
Z
2B
MB
MO
MP
33 10V
33 10V
-
+

Chip parts pin arrangement (Top view)

3.13 DR BOARD SCHEMATIC DIAGRAM 5 1
(CCD Driver circuit)

Main Functions of DR board

- CCD drive pulse generation
- Generation of HP pulse for pixel shift timing adjustment
- SHUTTER pulse generation



+19V
+15V
+9V
+5V
-9V
IC3 NJM78L15UA
IC5 TC74HC251AF
IC4.1
IC4.2
IC6.1 MC74HC74AF
IC6.2
IC7.3
IC7.4 MC74HC08AF
IC8.5
IC8.4
IC8.6
IC8.1 MC74HC14F
IC9.3
IC9.4 MC74HC02AF
IC9.1
IC9.2
IC7.2
IC7.1 MC74HC08AF
IC10.1 MC74HC00AF
IC10.2
IC10.3
IC10.4
IC101.1 MC74HC04AF
IC101.2
IC101.3
IC101.4
IC101.5
IC101.6
IC11 TC7SU04F
IC12.1 MC74HCU04AF
IC12.2
IC12.3
IC12.4
IC12.5
IC12.6 MC74HCU04AF
IC1 CXD1265R
TIMING PULSE GENERATOR
COUNTER (TIMING PULSE GEN)
SHUTTER SETTING DECODER
SHUTTER SETTING DATA
IC2 MN5198 PHASE LOCK LOOP
SHIFT REGISTER
COUNT DOWN
X1 N:CE41081-A0A 28.636MHZ P:CE41212-001 28.375MHZ
VR1 HP
VR2 SHP
VR3 CP
VR4 E00
PR
CN9
GND
DR +5V IN
HDIN
P.BLK OUT
VDIN
OBCP OUT
GAINCTL 3
SHUTTER CLK
SHUTTER DATA
2P/4P CTL
+19V IN
+9V IN
-9V IN
[MT] CN20-12
[SE] CN30-16
[PR] CN9-8
[SE] CN30-14
[PR] CN9-10
[CP] CN21-18
[CP] CN23-2
[CP] CN23-4
NC
[PS] CN24-9
[REG] CN28-2
[PS] CN24-8
SHUTTER PULSE
H DRIVE PULSE
Q1 2SB1219(QR)
VR101 B. Vsub
Q101 2SD1820(QR)
Q102 2SA1462Y3Y4
Q103 2SC3735(45)
Q104
IC102 MN3110SA
B-ch V-CCD DRIVER
VR201 G. Vsub
Q201 2SD1820(QR)
Q202 2SA1462Y3Y4
Q203 2SC3735(45)
Q204
IC202 MN3110SA
G-ch V-CCD DRIVER
VR301 R. Vsub
Q301 2SD1820(QR)
Q302 2SA1462Y3Y4
Q303 2SC3735(45)
Q304
IC302 MN3110SA
R-ch V-CCD DRIVER
IC201.1
IC201.2
IC201.3 MC74HC04AF
IC201.4
IC201.5
IC201.6
IC301.1
IC301.2
IC301.3 MC74HC04AF
IC301.4
IC301.5
IC301.6
CLAMP PULSE FOR C D S
F D A RESET PULSE
V sub BIAS
VERTICAL CCD DRIVE PULSE
HORIZONTAL CCD DRIVE PULSE
TO ISB
CN6
TO ISG
CN7
TO ISR
CN8
+15V
B∗R
G∗R
R∗R
B Vsub
G Vsub
R Vsub
∗ Vsub
V1
V2
V3
V4
CP
SHP
HP
NC
VL
H1
H2
GND
B-ch
G-ch
R-ch

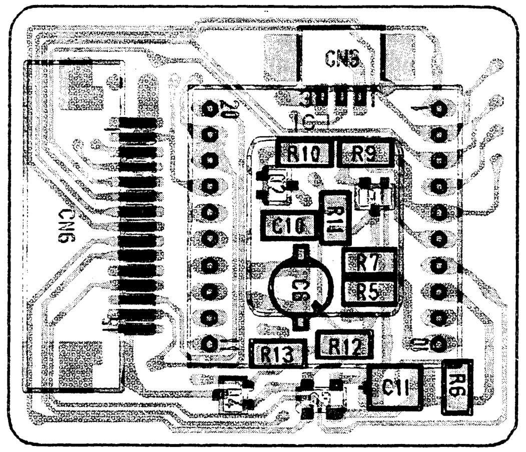
NOTE:PARTS WITH ∗ MARK ARE OPEN CURCUITS

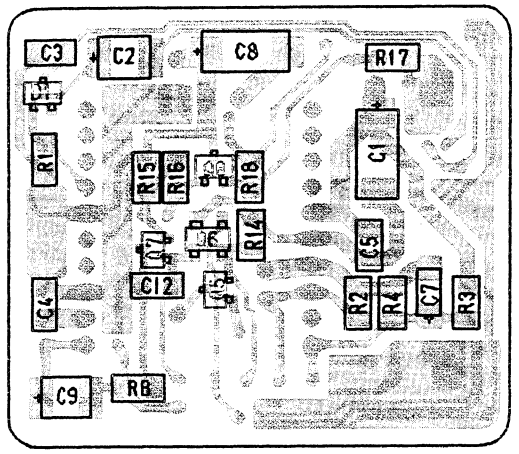
3.14 ISB/ISG/ISR CIRCUIT BOARDS

— Component Side (A) —

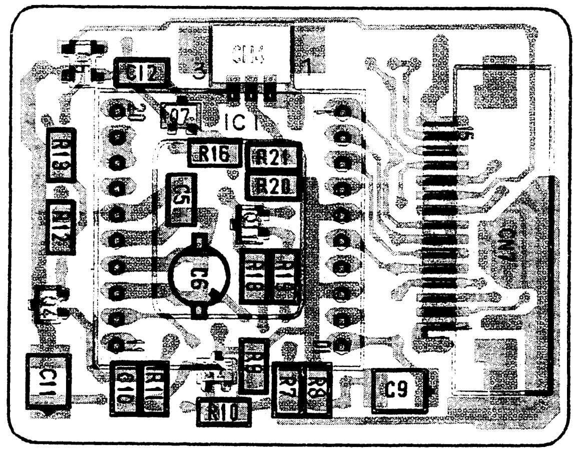
— Soldered Side (B) —

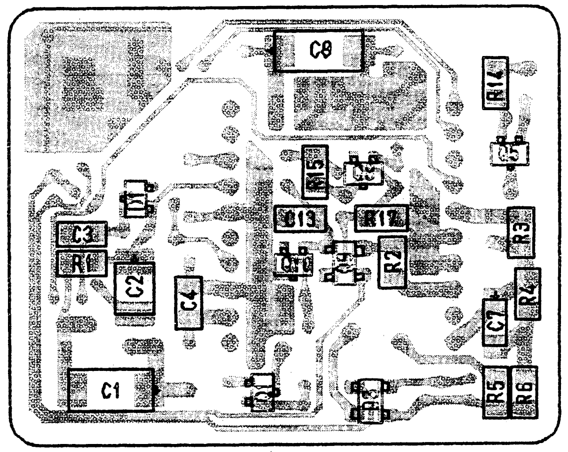
— ISB BOARD —


CN5
IC
20
1
CN6
R10
R9
C10
R11
R7
R5
C3
R13
R12
C11
R6

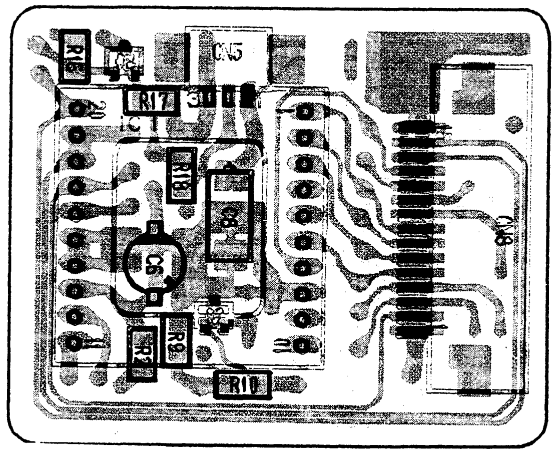

C3
C2
C8
R17
C1
R1
R15
R16
R18
R14
C12
C5
C4
R2
R4
C7
R3
C9
R8

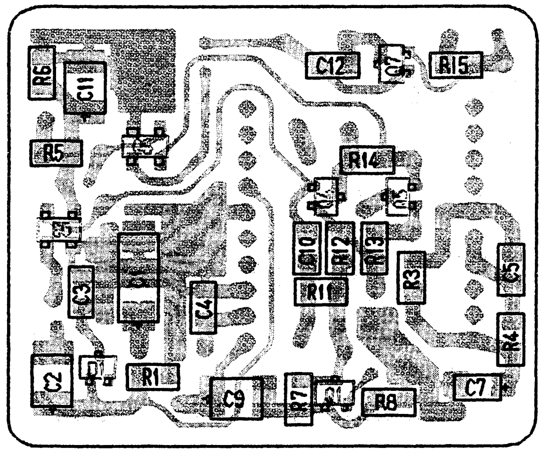
— ISG BOARD —


CN5
C12
IC
R16
R21
R20
R19
R12
C6
C11
C10
R11
R10
R7
R8
C9
CN1


C8
R14
R15
C3
R1
C2
C4
R17
R2
R3
R4
C7
C1
R5
R6

— ISR BOARD —

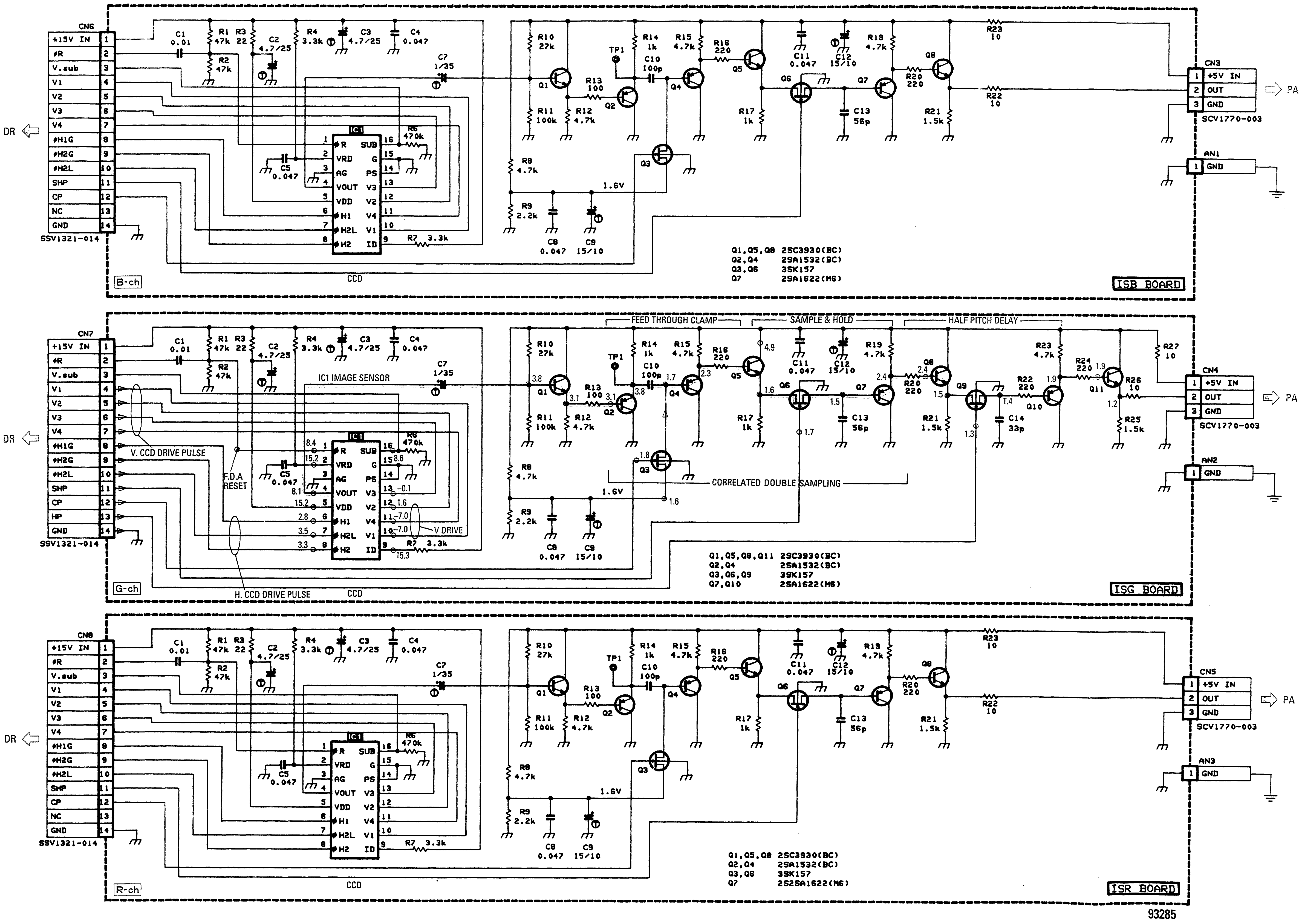

CN5
R16
R17
R18
C6
R9
R10
CN2


R6
C11
R5
C12
R15
R14
C3
C4
R10
R12
R13
R11
R3
C5
R4
C2
R1
C9
R7
R8
C7

3.15 ISB/ISG/ISR BOARD SCHEMATIC DIAGRAM 52/53/54
(Image Sensor board)

Main Functions of ISB, ISG, ISR boards

- To mount CCD image sensor
- Correlative double sampling



CN6
+15V IN
ϕR
V.sub
V1
V2
V3
V4
ϕH1G
ϕH2G
ϕH2L
SHP
CP
NC
GND
SSV1321-014
DR
C1 0.01
R1 47k
R2 47k
R3 22
C2 4.7/25
R4 3.3k
C3 4.7/25
C4 0.047
C7 1/35
C5 0.047
R6 470k
R7 3.3k
IC1
R SUB
VRD G
AG PS
VOUT V3
VDD V2
ϕH1 V4
ϕH2L V1
ϕH2 ID
CCD
B-ch
R10 27k
R11 100k
R12 4.7k
R13 100
R8 4.7k
R9 2.2k
C8 0.047
C9 15/10
TP1
R14 1k
R15 4.7k
R16 220
C10 100p
C11 0.047
C12 15/10
C13 56p
R17 1k
R19 4.7k
R20 220
R21 1.5k
R22 10
R23 10
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
1.6V
CN3
+5V IN
OUT
GND
SCV1770-003
PA
AN1
GND
Q1,Q5,Q8 2SC3930(BC)
Q2,Q4 2SA1532(BC)
Q3,Q6 3SK157
Q7 2SA1622(M6)
ISB BOARD
CN7
HP
IC1 IMAGE SENSOR
V. CCD DRIVE PULSE
F.D.A RESET
V DRIVE
H. CCD DRIVE PULSE
G-ch
FEED THROUGH CLAMP
SAMPLE & HOLD
HALF PITCH DELAY
CORRELATED DOUBLE SAMPLING
R23 4.7k
R24 220
R25 1.5k
R26 10
R27 10
R22 220
C14 33p
Q9 Q10 Q11
CN4
AN2
Q1,Q5,Q8,Q11 2SC3930(BC)
Q2,Q4 2SA1532(BC)
Q3,Q6,Q9 3SK157
Q7,Q10 2SA1622(M6)
ISG BOARD
CN8
R-ch
CN5
AN3
Q1,Q5,Q8 2SC3930(BC)
Q2,Q4 2SA1532(BC)
Q3,Q6 3SK157
Q7 2S2SA1622(M6)
ISR BOARD
93285

3.16 PA CIRCUIT BOARD

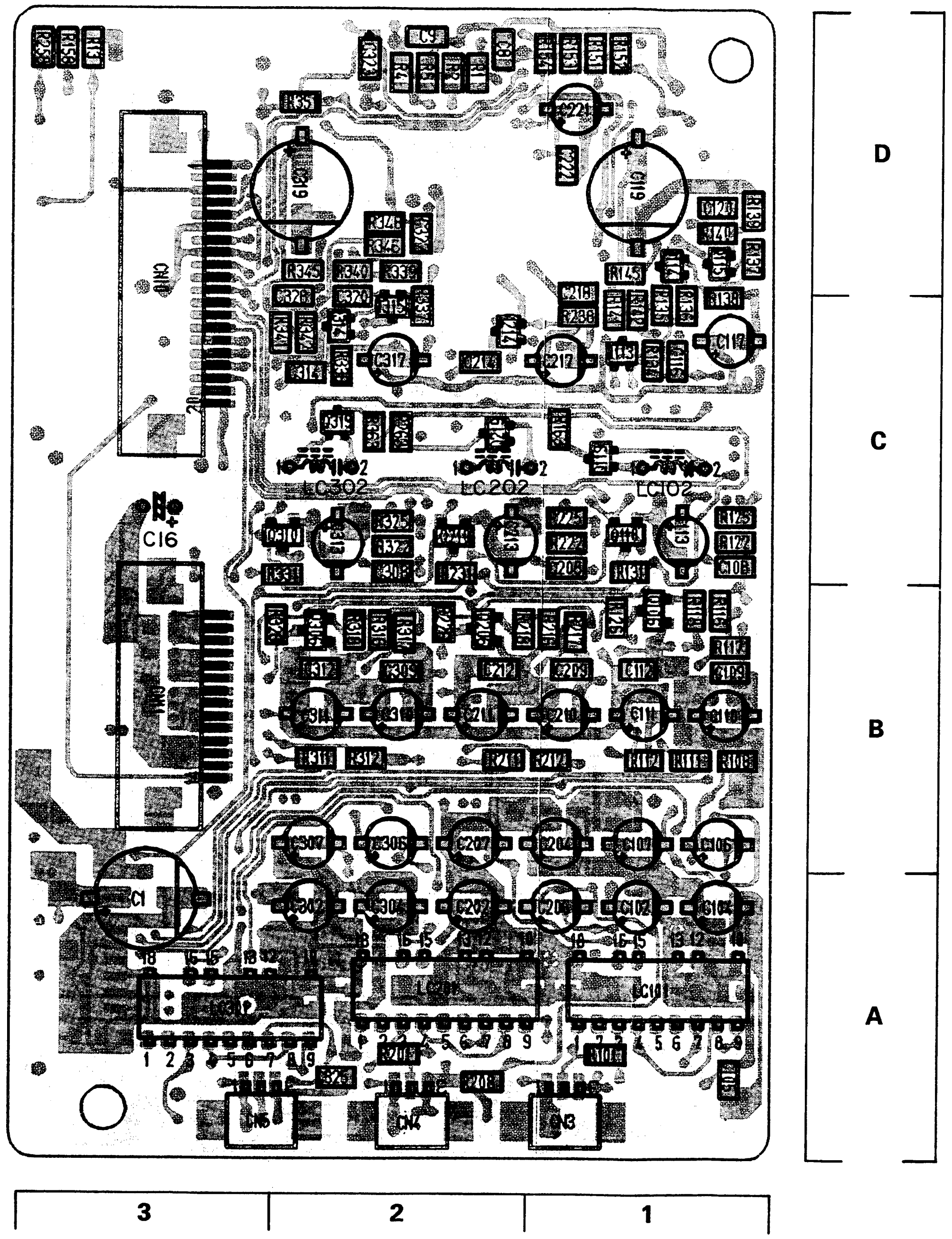
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

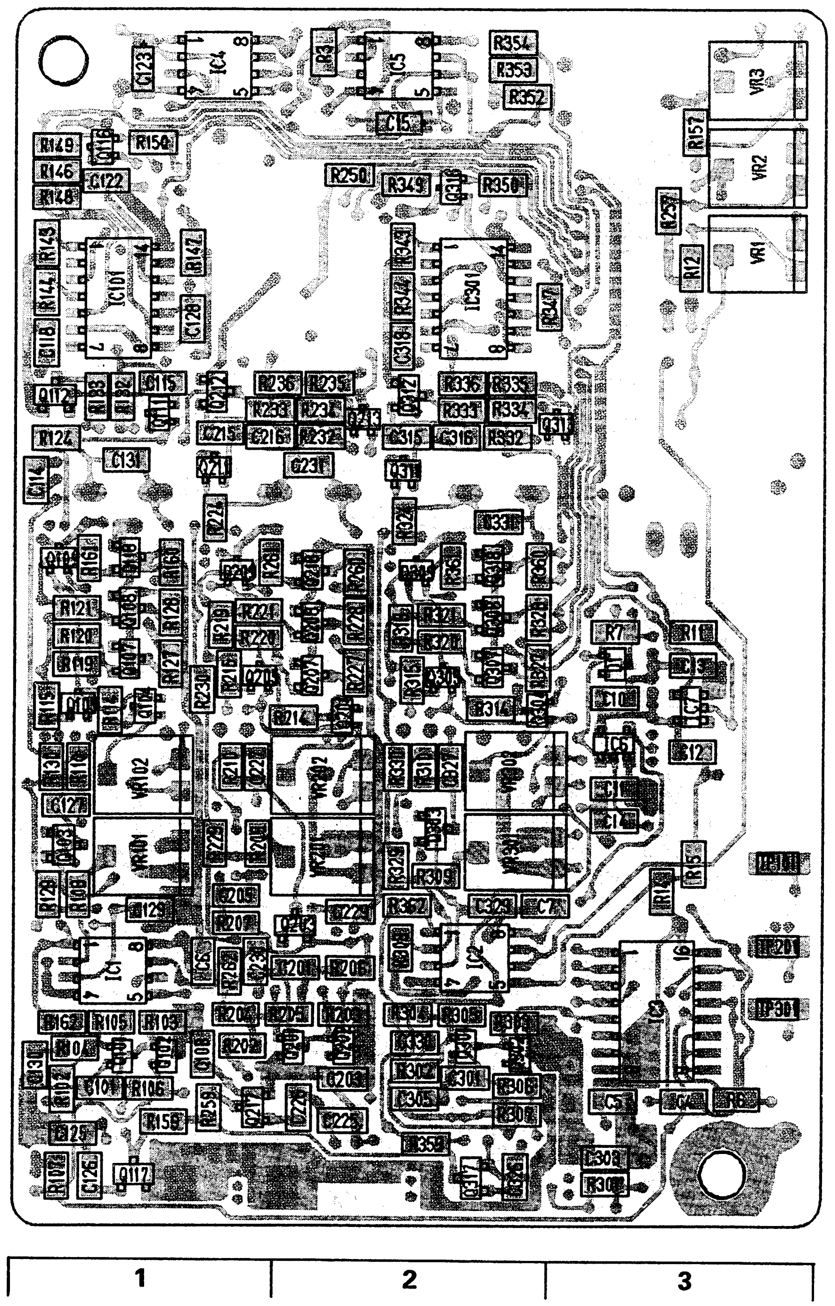
A-1C
Side — A
X axis — 1
Y axis — C

IC1	B-1A	R125	A-1C	R310	B-2B	C201	B-2A
IC2	B-2A	R126	A-1B	R311	A-2B	C202	A-2A
IC3	B-3A	R127	B-1B	R312	A-2B	C203	B-2A
IC4	B-1D	R128	B-1C	R314	B-2B	C204	A-1B
IC5	B-2D	R129	B-1B	R315	B-2B	C205	B-1B
IC6	B-3B	R130	B-1B	R316	A-2B	C206	A-1A
IC7	B-3B	R131	A-1C	R317	A-2B	C207	A-2B
IC101	B-1D	R132	B-1C	R318	A-2B	C208	A-1C
IC201	B-2D	R133	B-1C	R319	B-2B	C209	A-1B
IC301	B-2D	R134	A-1C	R320	B-2B	C210	A-1B
		R135	A-1C	R321	B-2C	C211	A-2B
Q101	B-1A	R136	A-1C	R322	A-2C	C212	A-2B
Q102	B-1A	R137	A-1D	R324	B-2C	C213	A-2C
Q103	B-1B	R138	A-1D	R325	A-2C	C214	A-2C
Q104	B-1B	R139	A-1D	R326	A-2B	C215	B-1C
Q105	B-1B	R140	A-1D	R327	B-2B	C216	B-1C
Q106	A-1B	R141	A-1C	R328	B-2C	C217	A-1C
Q107	B-1B	R142	A-1C	R329	B-2B	C218	B-1C
Q108	B-1C	R143	B-1D	R330	B-2B	C219	A-2D
Q109	B-1C	R144	B-1D	R331	A-2C	C220	A-1D
Q110	A-1C	R145	A-1D	R332	B-2C	C221	A-1D
Q111	B-1C	R146	B-1D	R333	B-2C	C222	A-1D
Q112	B-1C	R147	B-1D	R334	B-2C	C225	B-2A
Q113	A-1C	R148	B-1D	R335	B-2C	C226	B-2A
Q114	A-1D	R149	B-1D	R336	B-2C	C227	B-1B
Q115	A-1D	R150	B-1D	R337	A-2C	C228	A-2D
Q116	B-1D	R151	A-1D	R338	A-2C	C229	B-2B
Q117	B-1A	R152	A-1D	R339	A-2D	C230	B-1A
Q118	B-1C	R153	A-1D	R340	A-2D	C301	B-2A
Q201	B-2A	R154	A-1D	R341	A-2C	C302	A-2A
Q202	B-2A	R157	B-3D	R342	A-2C	C303	B-3A
Q203	B-2A	R158	A-3D	R343	B-2D	C304	A-2A
Q204	B-2B	R159	B-1A	R344	B-2D	C305	B-2A
Q205	B-1B	R160	B-1C	R345	A-2D	C306	A-2B
Q206	A-2B	R161	B-1C	R346	A-2D	C307	A-2B
Q207	B-2B	R162	B-1A	R347	B-3D	C308	A-2C
Q208	B-2B	R201	A-2A	R348	A-2D	C309	A-2B
Q209	B-1C	R202	B-1A	R349	B-2D	C310	A-2B
Q210	A-2C	R203	B-2A	R350	B-2D	C311	A-2B
Q211	B-1C	R204	B-1A	R351	A-2D	C312	A-2B
Q212	B-1C	R205	B-2A	R352	B-2D	C313	A-2C
Q213	B-2C	R206	B-2A	R353	B-2D	C314	A-2C
Q214	A-2C	R207	B-1A	R354	B-2D	C315	B-2C
Q215	A-1D	R208	A-2A	R359	B-2A	C316	B-2C
Q216	B-2D	R209	B-1B	R360	B-2C	C317	A-2C
Q217	B-1A	R210	B-1B	R361	B-2C	C318	B-2C
Q218	B-2C	R211	A-2B	R362	B-2B	C319	A-2D
Q301	B-2A	R212	A-1B			C320	A-2D
Q302	B-2A	R214	B-2B	VR1	B-3D	C322	A-2D
Q303	B-2B	R215	B-1B	VR2	B-3D	C323	A-2D
Q304	B-2B	R216	A-1B	VR3	B-3D	C325	A-2A
Q305	B-2B	R217	A-1B	VR101	B-1B	C326	B-2A
Q306	A-2B	R218	A-2B	VR102	B-1B	C327	B-2B
Q307	B-2B	R219	B-1B	VR201	B-2B	C328	A-2D
Q308	B-2C	R220	B-1B	VR202	B-2B	C329	B-2B
Q309	B-2C	R221	B-1C	VR301	B-2B	C330	B-2A
Q310	A-2C	R222	A-1C	VR302	B-2B		
Q311	B-2C	R223	A-1C			TP101	B-3B
Q312	B-2C	R224	B-1C	C1	A-3A	TP201	B-3A
Q313	B-3C	R225	A-1C	C4	B-3A	TP301	B-3A
Q314	A-2C	R226	A-2B	C5	B-3A		
Q315	A-2C	R227	B-2B	C6	B-1A	CN3	A-1A
Q316	B-2D	R228	B-2B	C7	B-3A	CN4	A-2A
Q317	B-2A	R229	B-1B	C8	A-2D	CN5	A-3A
Q318	B-2C	R230	B-1B	C9	A-2D	CN10	A-3D
		R231	A-2C	C10	B-3B	CN11	A-3B
D1	B-3B	R232	B-2C	C11	B-3B		
		R233	B-1C	C12	B-3B	LC101	A-1A
R1	A-2D	R234	B-2C	C13	B-3B	LC102	A-1C
R2	A-2D	R235	B-2C	C14	B-3B	LC201	A-2A
R3	B-2D	R236	B-2C	C15	B-2D	LC202	A-2C
R4	A-2D	R237	A-1D	C16	A-3C	LC301	A-3A
R5	A-2D	R238	A-1C	C101	B-1A	LC302	A-2C
R6	B-3A	R239	A-1D	C102	A-1A		
R7	B-3B	R240	A-1D	C103	B-1A		
R11	B-3B	R241	A-2C	C104	A-1A		
R12	B-3D	R242	A-2C	C105	A-1A		
R13	A-3D	R243	B-1D	C106	A-1B		
R101	A-1A	R244	B-1D	C107	A-1B		
R102	B-1A	R245	A-2D	C108	A-1C		
R103	B-1A	R246	B-1D	C109	A-1B		
R104	B-1A	R247	B-2D	C110	A-1B		
R105	B-1A	R248	B-1D	C111	A-1B		
R106	B-1A	R249	B-1D	C112	A-1B		
R107	B-1A	R250	B-2D	C113	A-1C		
R108	A-1B	R257	B-3D	C114	B-1C		
R109	B-1B	R258	A-3D	C115	B-1C		
R110	B-1B	R259	B-1A	C116	A-1C		
R111	A-1B	R260	B-2C	C117	A-1C		
R112	A-1B	R261	B-1C	C118	B-1C		
R114	B-1B	R262	B-1A	C119	A-1D		
R115	B-1B	R301	B-3A	C120	A-1D		
R116	A-1B	R302	B-2A	C122	B-1D		
R117	A-1B	R303	B-2A	C123	B-1D		
R118	A-1B	R304	B-2A	C125	B-1A		
R119	B-1B	R305	B-2A	C126	B-1A		
R120	B-1B	R306	B-2A	C127	B-1B		
R121	B-1C	R307	B-2A	C128	B-1C		
R122	A-1C	R308	B-2A	C129	B-1B		
R124	B-1C	R309	B-2B	C130	B-1A		

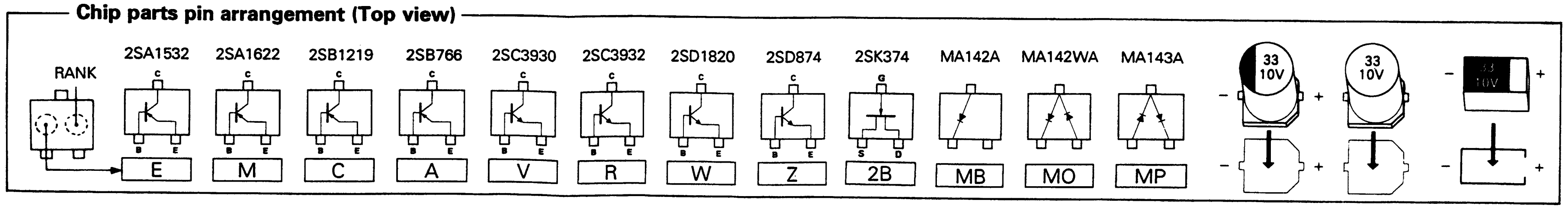
— Component Side (A) —



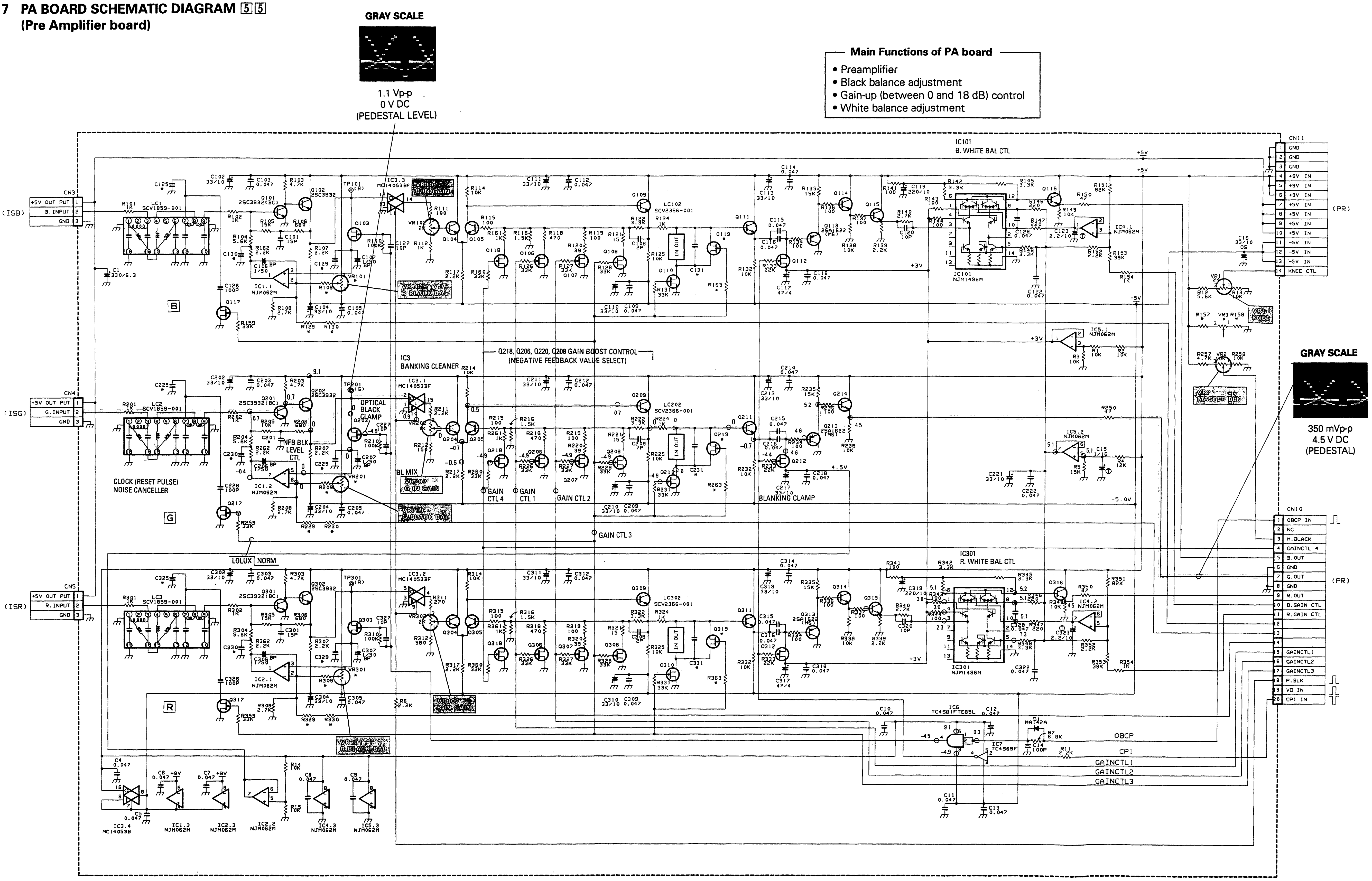
— Soldered Side (B) —



Chip parts pin arrangement (Top view)



3.17 PA BOARD SCHEMATIC DIAGRAM 5 5
(Pre Amplifier board)


GRAY SCALE
1.1 Vp-p
0 V DC
(PEDESTAL LEVEL)
GRAY SCALE
350 mVp-p
4.5 V DC
(PEDESTAL)
(ISB)
(ISG)
(ISR)
CN3
CN4
CN5
+5V OUT PUT
B.INPUT
G.INPUT
R.INPUT
GND
LC1 SCV1859-001
LC2 SCV1859-001
LC3 SCV1859-001
IC101 B. WHITE BAL CTL
IC301 R. WHITE BAL CTL
IC3 BANKING CLEANER
Q218, Q206, Q220, Q208 GAIN BOOST CONTROL (NEGATIVE FEEDBACK VALUE SELECT)
OPTICAL BLACK CLAMP
NFB BLK LEVEL CTL
BL MIX
CLOCK (RESET PULSE) NOISE CANCELLER
GAIN CTL 4
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
BLANKING CLAMP
LOLUX NORM
VR101 B. BLACK BAL
VR201 G. BLACK BAL
VR301 R. BLACK BAL
VR102 B.IN GAIN
VR202 G.IN GAIN
VR302 R.IN GAIN
VR1 KNEE
VR2 MASTER BLK
IC101 NJM1496M
IC301 NJM1496M
IC6 TC4S81FTE85L
IC7 TC4S69F
OBCP
CP1
GAINCTL1
GAINCTL2
GAINCTL3
CN11
GND
+9V IN
+5V IN
-5V IN
KNEE CTL
(PR)
CN10
OBCP IN
NC
M.BLACK
GAINCTL 4
B.OUT
G.OUT
R.OUT
B.GAIN CTL
R.GAIN CTL
GAINCTL1
GAINCTL2
GAINCTL3
P.BLK
VD IN
CP1 IN
B
G
R

Main Functions of PA board

- Preamplifier
- Black balance adjustment
- Gain-up (between 0 and 18 dB) control
- White balance adjustment

UNLES OTHER WISE SPECIFIED
NPNTRANSISTORS:2SC3930(BC)
FETS:2SK374(Q.R)

UNLES OTHER WISE SPECIFIED
NPNTRANSISTORS:2SC3930(BC)
FETS:2SK374(Q.R)

*印のある部品は、OPEN です。

Parts with *mark are open circuits.

3.18 PR CIRCUIT BOARD

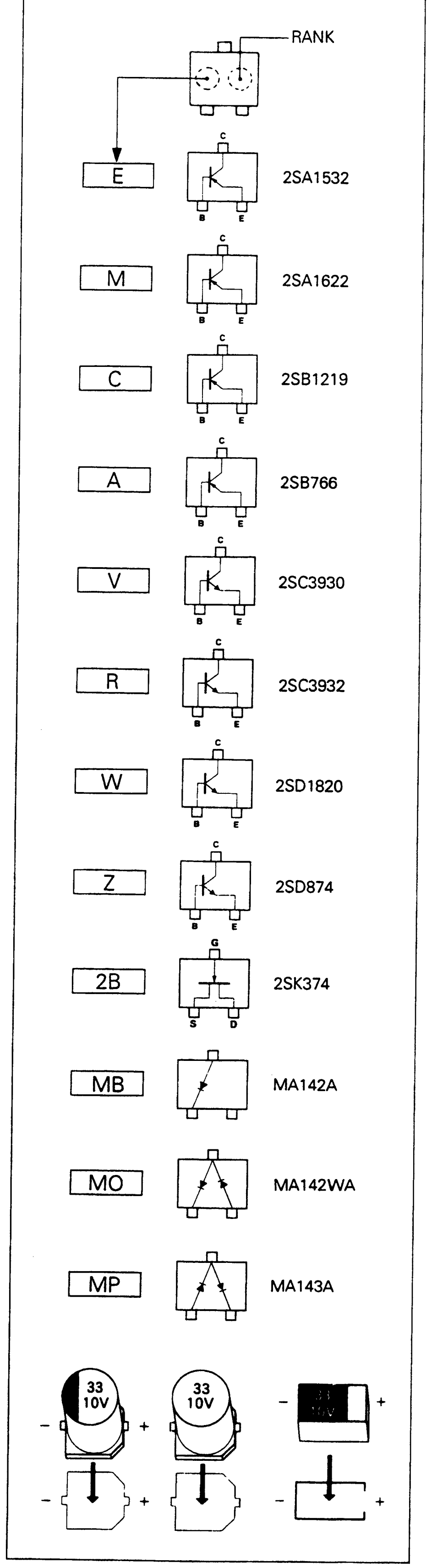
●ADDRESS TABLE OF BOARD PARTS

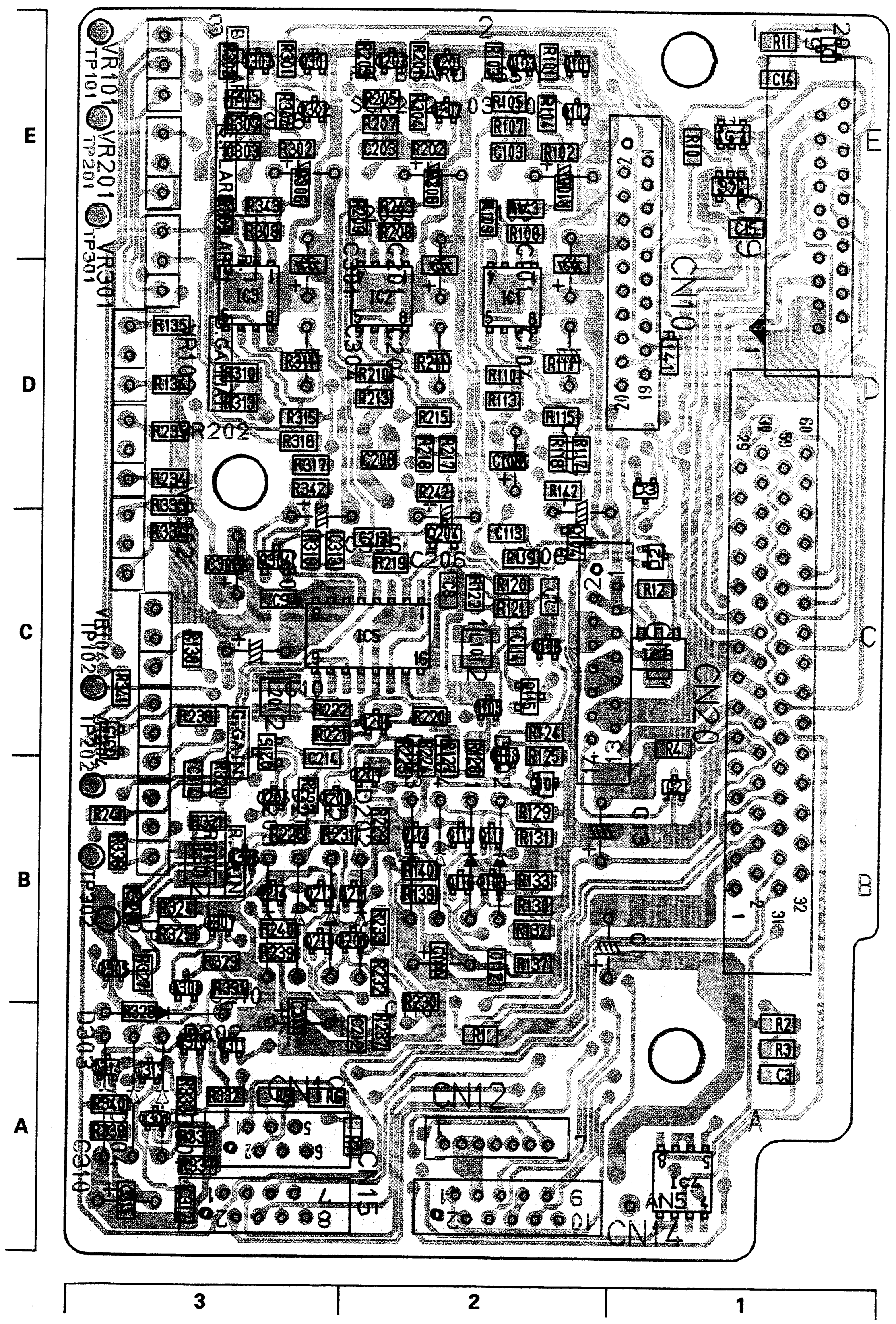
Each address may have an address error by one interval.

A-1C
Side — A
X axis — 1
Y axis — C

Part	Address
IC1	2D
IC2	2D
IC3	3D
IC4	1A
IC5	2C
IC6	1E
IC7	1E
IC8	1C
Q2	1B
Q101	2E
Q102	2E
Q103	2E
Q104	2C
Q105	2C
Q106	2C
Q107	2B
Q108	2C
Q109	2B
Q110	2B
Q111	2B
Q113	2B
Q114	2B
Q115	2C
Q201	2E
Q202	2E
Q203	2E
Q204	2C
Q205	3B
Q206	2C
Q207	2B
Q208	3B
Q209	2B
Q210	3B
Q211	2B
Q213	3B
Q214	3B
Q215	3C
Q301	3E
Q302	3E
Q303	3E
Q304	3C
Q305	3B
Q306	3B
Q307	3B
Q308	3B
Q309	3A
Q310	3A
Q311	3A
Q313	3A
Q314	3A
Q315	3C
D1	1E
D2	1C
D3	1D
D101	2B
D102	2B
D103	2B
D104	2B
D201	3B
D202	2B
D203	3B
D204	3B
D301	3A
D302	3A
D303	3A
D304	3A
R1	2A
R2	1A
R3	1A
R4	1C
R5	3A
R6	3A
R7	2A
R10	1E
R11	1E
R12	1C
R101	2E
R102	2E
R103	2E
R104	2E
R105	2E
R106	2E
R107	2E
R108	2E
R109	2E
R110	2D
R111	2D
R113	2D
R115	2D
R117	2D
R118	2D
R119	2C
R120	2C
R121	2C
R122	2C
R124	2C
R125	2C
R127	2B
R128	2B
R129	2B
R130	2B
R131	2B
R132	2B
R133	2B
R134	3D
R135	3D
R137	2B
R138	3C
R139	2B
R140	2B
R141	1D
R142	2D
R143	2E
R201	2E
R202	2E
R203	2E
R204	2E
R205	2E
R206	2E
R207	2E
R208	2E
R209	2E
R210	2D
R211	2D
R213	2D
R215	2D
R217	2D
R218	2D
R219	2C
R220	2C
R221	3C
R222	3C
R224	2B
R225	2B
R227	3B
R228	3B
R229	2B
R230	2B
R231	3B
R232	2B
R233	2B
R234	3D
R235	3D
R237	2A
R238	3C
R239	3B
R240	3B
R241	3B
R242	2D
R243	2E
R301	3E
R302	3E
R303	3E
R304	3E
R305	3E
R306	3E
R307	3E
R308	3E
R309	3E
R310	3D
R311	3D
R313	3D
R315	3D
R317	3D
R318	3D
R319	3C
R320	3B
R321	3B
R322	3B
R324	3B
R325	3B
R327	3B
R328	3A
R329	3B
R330	3A
R331	3B
R332	3A
R333	3A
R334	3C
R335	3D
R337	3A
R338	3B
R339	3A
R340	3A
R341	3C
R342	3D
R343	3E
VR101	3E
VR102	3D
VR104	3C
VR201	3E
VR202	3D
VR204	3B
VR301	3D
VR302	3C
VR304	3B
C1	2B
C3	1A
C4	2D
C5	2D
C6	3D
C7	2C
C8	2C
C9	3C
C10	3C
C13	2B
C14	1E
C15	1E
C101	2D
C103	2E
C104	2D
C105	2E
C106	2C
C107	2D
C108	2D
C110	2B
C111	2B
C112	2B
C113	2C
C114	2C
C201	2D
C203	2E
C204	2D
C205	2E
C206	2C
C208	2D
C210	3A
C211	3A
C212	2A
C213	2C
C214	3B
C301	3D
C303	3E
C304	3D
C305	3E
C306	3C
C307	3C
C308	3C
C310	3A
C311	3A
C312	3A
C313	3C
C314	3B
L101	2C
L201	3C
L301	3B
TP1	3B
TP101	3E
TP102	3C
TP201	3E
TP202	3B
TP301	3E
TP302	3B
CN9	1D
CN10	1E
CN11	1C
CN12	2A
CN13	3A
CN14	2A
CN15	3A
CN20	1B
AN5	1A

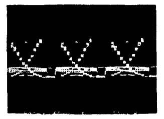
Chip parts pin arrangement (Top view)





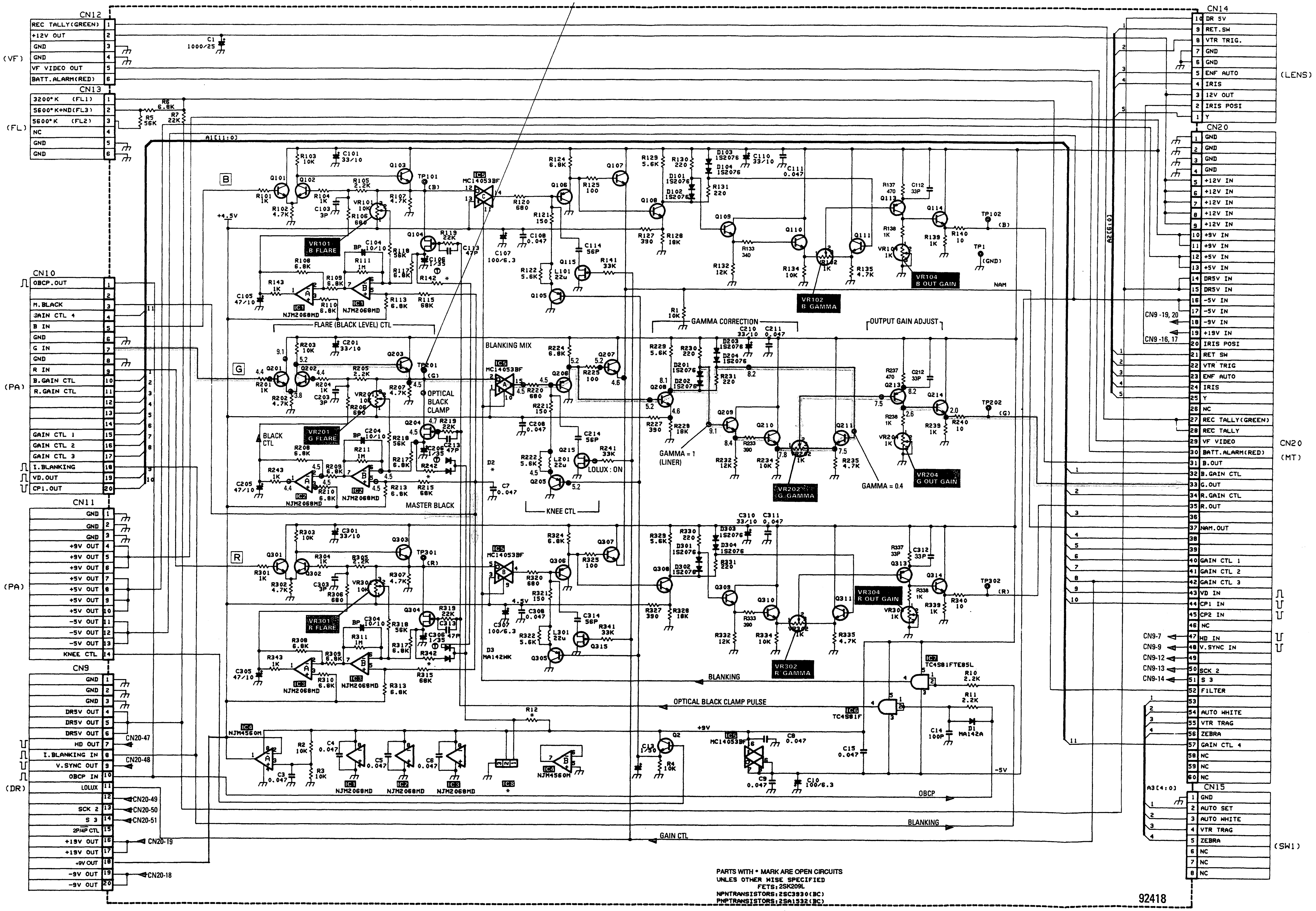
3.19 PR BOARD SCHEMATIC DIAGRAM 5 6
(Video Process board)

GRAY SCALE



1.1 VP-P
5V DC (PEDESTAL LEVEL)

Main Functions of PR board
- Flare correction
- Knee compression
- Gamma correction
- Output gain (R, G, B) adjustment


CN12
REC TALLY(GREEN)
+12V OUT
GND
GND
VF VIDEO OUT
BATT.ALARM(RED)
(VF)
CN13
3200°K (FL1)
5600°K+ND(FL3)
5600°K (FL2)
NC
GND
GND
(FL)
CN10
OBCP.OUT
M.BLACK
GAIN CTL 4
B IN
GND
G IN
GND
R IN
B.GAIN CTL
R.GAIN CTL
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
I.BLANKING
VD.OUT
CP1.OUT
(PA)
CN11
GND
+9V OUT
+5V OUT
-5V OUT
KNEE CTL
(PA)
CN9
GND
DR5V OUT
HD OUT
I.BLANKING IN
V.SYNC OUT
OBCP IN
LOLUX
SCK 2
S 3
2P/4P CTL
+19V OUT
+9V OUT
-9V OUT
(DR)
CN20-47
CN20-48
CN20-49
CN20-50
CN20-51
CN20-19
CN20-18
CN14
DR 5V
RET.SW
VTR TRIG.
GND
GND
ENF AUTO
IRIS
12V OUT
IRIS POSI
Y
(LENS)
CN20
GND
+12V IN
+9V IN
+5V IN
DR5V IN
-5V IN
-9V IN
+19V IN
IRIS POSI
RET SW
VTR TRIG
ENF AUTO
IRIS
Y
NC
REC TALLY(GREEN)
REC TALLY
VF VIDEO
BATT.ALARM(RED)
B.OUT
B.GAIN CTL
G.OUT
R.GAIN CTL
R.OUT
NAM.OUT
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
VD IN
CP1 IN
CP2 IN
NC
HD IN
V.SYNC IN
SCK 2
S 3
FILTER
AUTO WHITE
VTR TRAG
ZEBRA
GAIN CTL 4
NC
(MT)
CN9-19, 20
CN9-16, 17
CN9-7
CN9-9
CN9-12
CN9-13
CN9-14
CN15
GND
AUTO SET
AUTO WHITE
VTR TRAG
ZEBRA
NC
(SW1)
A1[11:0]
A2[6:0]
A3[4:0]
B
G
R
VR101 B FLARE
VR201 G FLARE
VR301 R FLARE
VR102 B GAMMA
VR202 G GAMMA
VR302 R GAMMA
VR104 B OUT GAIN
VR204 G OUT GAIN
VR304 R OUT GAIN
FLARE (BLACK LEVEL) CTL
BLACK CTL
MASTER BLACK
BLANKING MIX
OPTICAL BLACK CLAMP
KNEE CTL
LOLUX : ON
GAMMA CORRECTION
GAMMA = 1 (LINER)
GAMMA = 0.4
OUTPUT GAIN ADJUST
TP101 (B)
TP201 (G)
TP301 (R)
TP102 (B)
TP202 (G)
TP302 (R)
TP1 (GND)
NAM
IC1 NJM2068MD
IC2 NJM2068MD
IC3 NJM2068MD
IC4 NJM4560M
IC5 MC14053BF
IC6 TC4S81F
IC7 TC4S81FTE85L
IC8
BLANKING
OPTICAL BLACK CLAMP PULSE
OBCP
GAIN CTL
+9V
-5V
+4.5V
D1 MA142A
D3 MA142WK
92418

PARTS WITH * MARK ARE OPEN CIRCUITS
UNLES OTHER WISE SPECIFIED
FETS:2SK209L
NPNTRANSISTORS:2SC3930(BC)
PNPTRANSISTORS:2SA1532(BC)

3.20 CC CIRCUIT BOARD

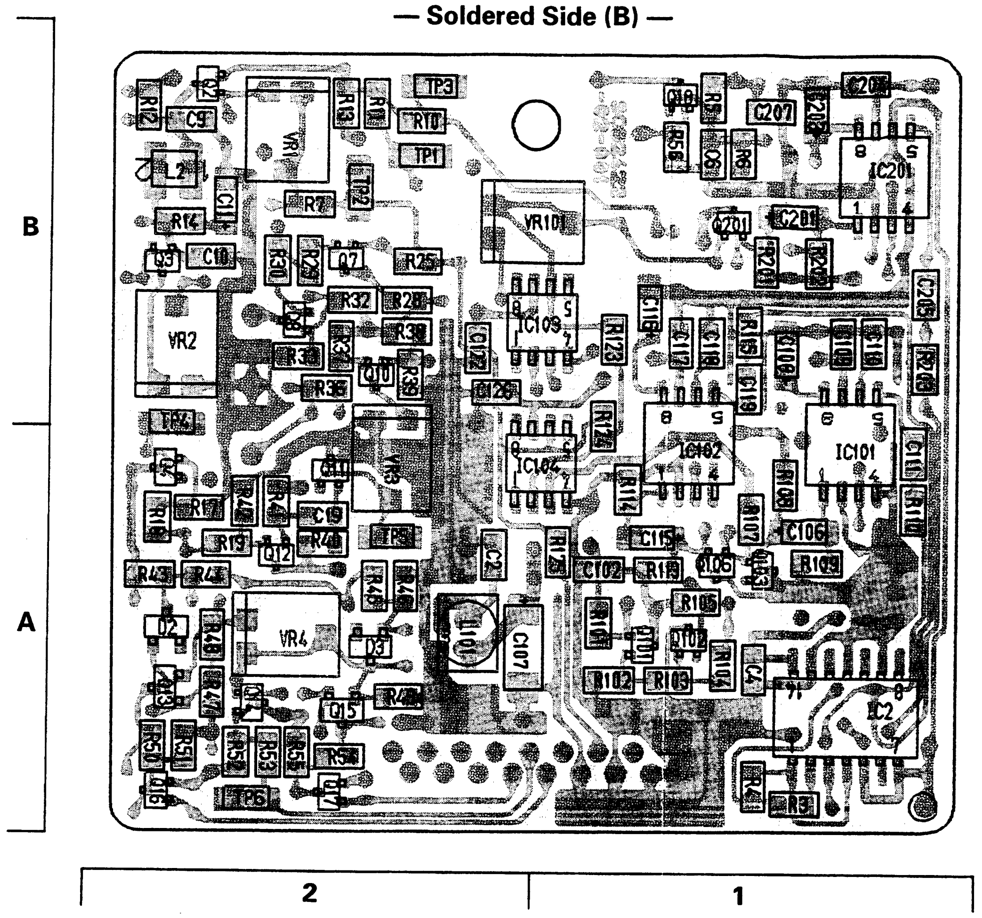
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

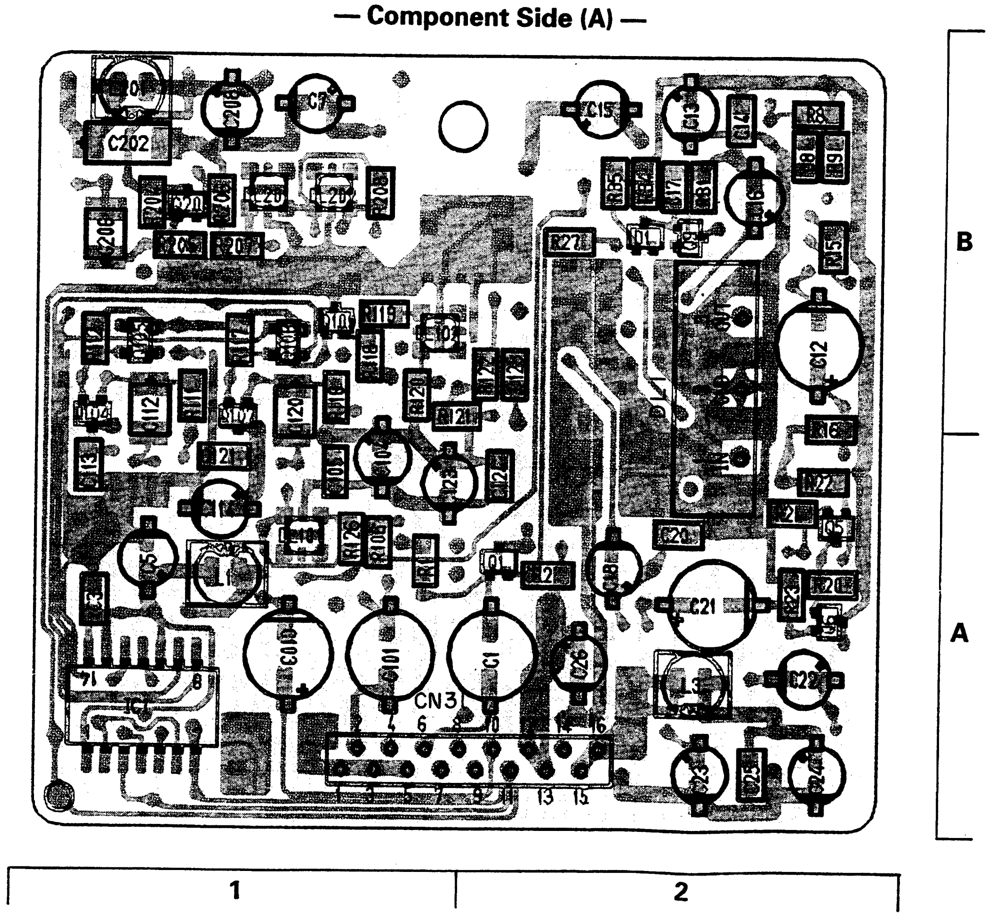
A-1C
Side — A
X axis — 1
Y axis — C

IC1	A- 1A	R44	B- 2A	C104	A- 1A
IC2	B- 1A	R45	B- 2A	C105	A- 1A
IC101	B- 1A	R46	B- 2A	C106	B- 1A
IC102	B- 1A	R47	B- 2A	C107	B- 2A
IC103	B- 2B	R48	B- 2A	C108	B- 1B
IC104	B- 2A	R49	B- 2A	C109	B- 1B
IC201	B- 1B	R50	B- 2A	C110	B- 1B
		R51	B- 2A	C111	B- 1A
Q1	A- 2A	R52	B- 2A	C112	A- 1B
Q2	B- 2B	R53	B- 2A	C113	A- 1A
Q3	B- 2B	R54	B- 2A	C114	A- 1A
Q4	B- 2A	R55	B- 2A	C115	B- 1A
Q5	A- 2A	R56	B- 1B	C116	B- 1B
Q6	A- 2A	R101	B- 1A	C117	B- 1B
Q7	B- 2B	R102	B- 1A	C118	B- 1B
Q8	B- 2B	R103	B- 1A	C119	B- 1B
Q9	A- 2B	R104	B- 1A	C120	A- 1B
Q10	B- 2B	R105	B- 1A	C121	A- 1A
Q11	B- 2A	R106	A- 1A	C122	B- 2B
Q12	B- 2A	R107	B- 1A	C123	A- 1A
Q13	B- 2A	R108	B- 1A	C124	A- 2A
Q14	B- 2A	R109	B- 1A	C125	A- 2B
Q15	B- 2A	R110	B- 1A	C126	B- 2B
Q16	B- 2A	R111	A- 1B	C201	B- 1B
Q17	B- 2A	R112	A- 1B	C202	A- 1B
Q18	B- 1B	R113	B- 1A	C203	B- 1B
Q101	B- 1A	R114	B- 1A	C204	B- 1B
Q102	B- 1A	R115	B- 1B	C205	B- 1B
Q103	B- 1A	R116	A- 1B	C206	A- 1B
Q104	A- 1B	R117	A- 1B	C207	B- 1B
Q105	A- 1B	R118	A- 1B	C208	A- 1B
Q106	B- 1A	R119	A- 1B		
Q107	A- 1B	R120	A- 1B	L1	A- 1A
Q108	A- 1B	R121	A- 1B	L2	B- 2B
Q109	A- 1B	R122	A- 2B	L3	A- 2A
Q201	B- 1B	R123	B- 1B	L101	B- 2A
Q202	A- 1B	R124	B- 1B	L201	A- 1B
		R125	B- 1A		
D1	A- 2B	R126	A- 1A	DL1	A- 2A
D2	B- 2A	R201	B- 1B	DL101	A- 1A
D3	B- 2A	R202	B- 1B	DL102	A- 1B
		R203	B- 1B	DL201	A- 1B
R1	A- 1A	R204	A- 1B	DL202	A- 1B
R2	A- 2A	R205	A- 1B		
R3	B- 1A	R206	A- 1B	TP1	B- 2B
R4	B- 1A	R207	A- 1B	TP2	B- 2B
R5	B- 1B	R208	A- 1B	TP3	B- 2B
R6	B- 1B			TP4	B- 2B
R7	B- 2B	VR1	B- 2B	TP5	B- 2A
R8	A- 2B	VR2	B- 2B	TP6	B- 2A
R9	A- 2B	VR3	B- 2A	TP7	A- 1A
R10	B- 2B	VR4	B- 2A		
R11	B- 2B	VR101	B- 1B	CN31	A- 1A
R12	B- 2B				
R13	B- 2B	C1	A- 2A		
R14	B- 2B	C2	B- 2A		
R15	A- 2B	C3	A- 1A		
R16	A- 2B	C4	B- 1A		
R17	B- 2A	C5	A- 1A		
R18	B- 2A	C6	B- 1B		
R19	B- 2A	C7	A- 1B		
R20	A- 2A	C8	A- 2B		
R21	A- 2A	C9	B- 2B		
R22	A- 2A	C10	B- 2B		
R23	A- 2A	C11	B- 2B		
R25	B- 2B	C12	A- 2B		
R27	A- 2B	C13	A- 2B		
R28	B- 2B	C14	A- 2B		
R29	B- 2B	C15	A- 2B		
R30	B- 2B	C16	A- 2B		
R31	A- 2B	C17	A- 2B		
R32	B- 2B	C18	A- 2A		
R33	B- 2B	C19	B- 2A		
R34	A- 2B	C20	A- 2A		
R35	A- 2B	C21	A- 2A		
R36	B- 2B	C22	A- 2A		
R37	B- 2B	C23	A- 2A		
R38	B- 2B	C24	A- 2A		
R39	B- 2B	C25	A- 2A		
R40	B- 2A	C26	A- 2A		
R41	B- 2A	C101	A- 1A		
R42	B- 2A	C102	B- 1A		
R43	B- 2A	C103	A- 1A		

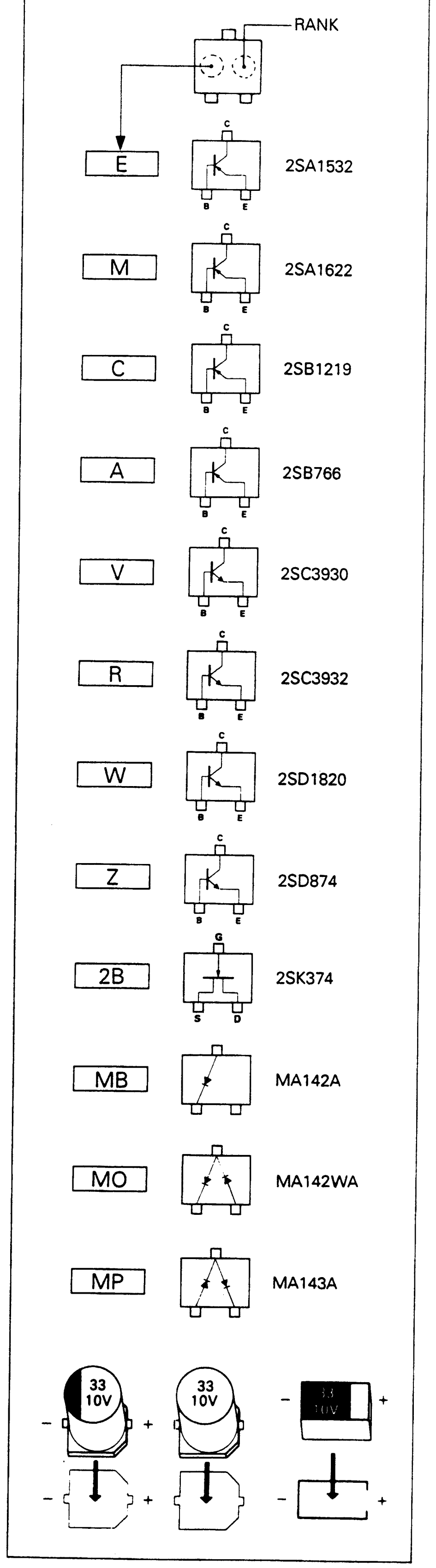
— Soldered Side (B) —


B
A
2
1
IC201
VR101
IC103
IC104
IC102
IC101
IC2
VR1
VR2
VR3
VR4
TP1
TP2
TP3
TP5
TP6

— Component Side (A) —

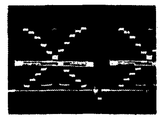

B
A
1
2
CN3
C202
C21
C12
C1

Chip parts pin arrangement
(Top view)


RANK
E
2SA1532
M
2SA1622
C
2SB1219
A
2SB766
V
2SC3930
R
2SC3932
W
2SD1820
Z
2SD874
2B
2SK374
MB
MA142A
MO
MA142WA
MP
MA143A
33 10V
33 10V

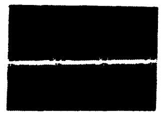
3.21 CC BOARD SCHEMATIC DIAGRAM 5 7
(Contour Corrector board)

GRAY SCALE



960 mVp-p
2.6 V DC
(PEDESTAL)

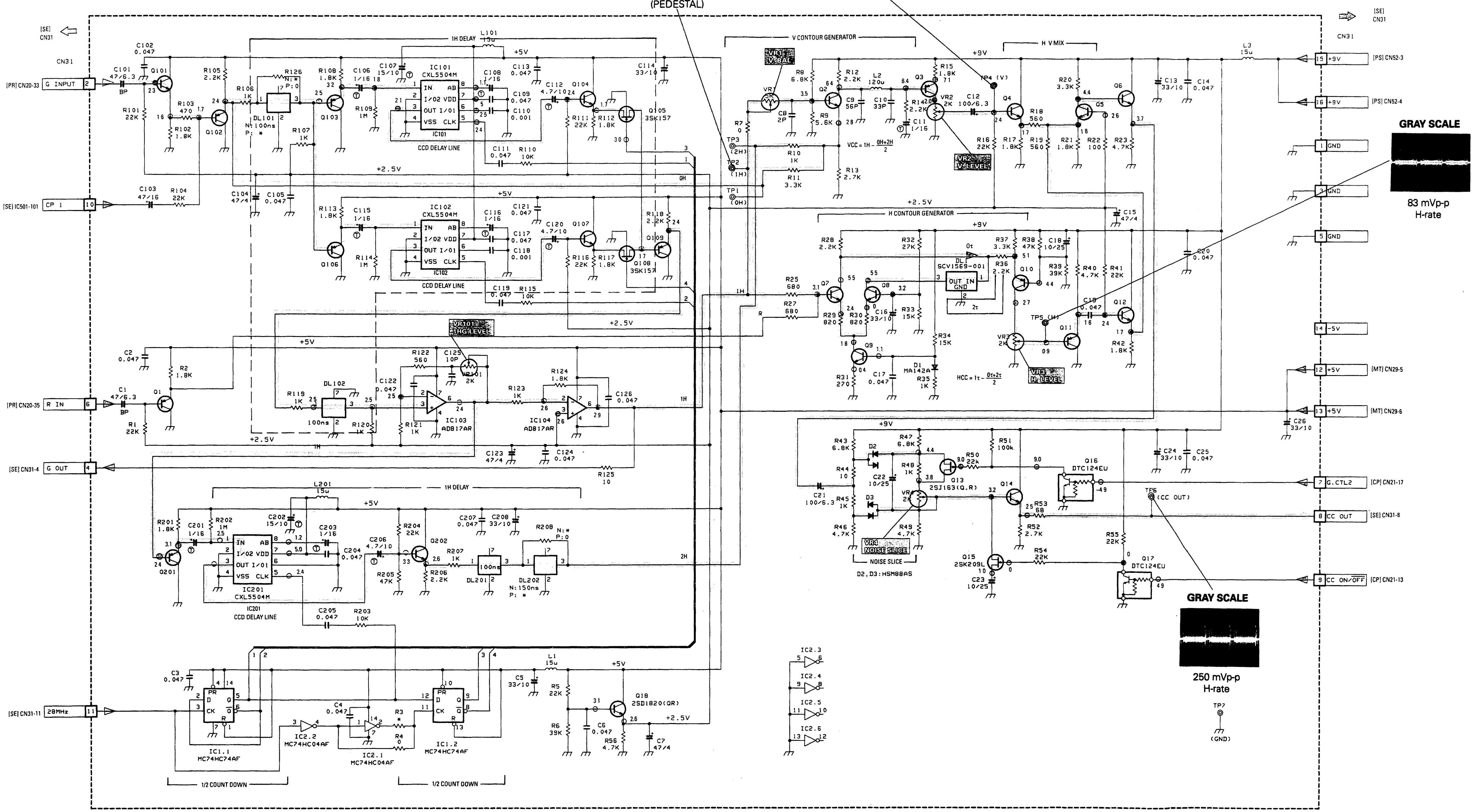
GRAY SCALE



37 mVp-p
H-rate

Main Functions of CC board

- Vertical contour signal generation
- Horizontal contour signal generation
- Noise slicing
- Generation of 1H delay line drive pulse


[SE] CN31
CN31
[PR] CN20-33 G INPUT 2
[SE] IC501-101 CP 1 10
[PR] CN20-35 R IN 6
[SE] CN31-4 G OUT 4
[SE] CN31-11 28MHz 11
1H DELAY L101 15u
IC101 CXL5504M
CCD DELAY LINE
IC102 CXL5504M
CCD DELAY LINE
VR101 1HG LEVEL
IC103 AD817AR
IC104 AD817AR
DL101
DL102
L201 15u 1H DELAY
IC201 CXL5504M
CCD DELAY LINE
DL201
DL202 N: 150ns P: *
IC1.1 MC74HC74AF
IC2.2 MC74HC04AF
IC2.1 MC74HC04AF
IC1.2 MC74HC74AF
1/2 COUNT DOWN
1/2 COUNT DOWN
L1 15u
Q18 2SD1820(QR)
+5V
+2.5V
V CONTOUR GENERATOR
VR1 V.BAL
VR2 V.LEVEL
TP1 (0H)
TP2 (1H)
TP3 (2H)
VCC = 1H - (0H+2H)/2
TP4 (V)
H V MIX
+9V
H CONTOUR GENERATOR
DL SCV1569-001
VR3 H.LEVEL
TP5 (H)
HCC = 1τ - (0τ+2τ)/2
VR4 NOISE SLICE
NOISE SLICE
D2, D3 : HSM88AS
Q13 2SJ163(Q.R)
Q15 2SK209L
Q16 DTC124EU
Q17 DTC124EU
TP6 (CC OUT)
TP7 (GND)
L3 15u
[SE] CN31
15 +9V [PS] CN52-3
16 +9V [PS] CN52-4
1 GND
3 GND
5 GND
14 -5V
12 +5V [MT] CN29-5
13 +5V [MT] CN29-6
7 G.CTL2 [CP] CN21-17
8 CC OUT [SE] CN31-8
9 CC ON/OFF [CP] CN21-13
IC2.3
IC2.4
IC2.5
IC2.6
GRAY SCALE
83 mVp-p
H-rate
GRAY SCALE
250 mVp-p
H-rate

UNLESS OTHERWISE SPECIFIED
NPN TRANSISTORS: 2SC3930(BC)
PNP TRANSISTORS: 2SA1532(BC)
FETS: 2SK374(Q.R)

The parts marked by * are open.

3.22 N. SE CIRCUIT BOARD

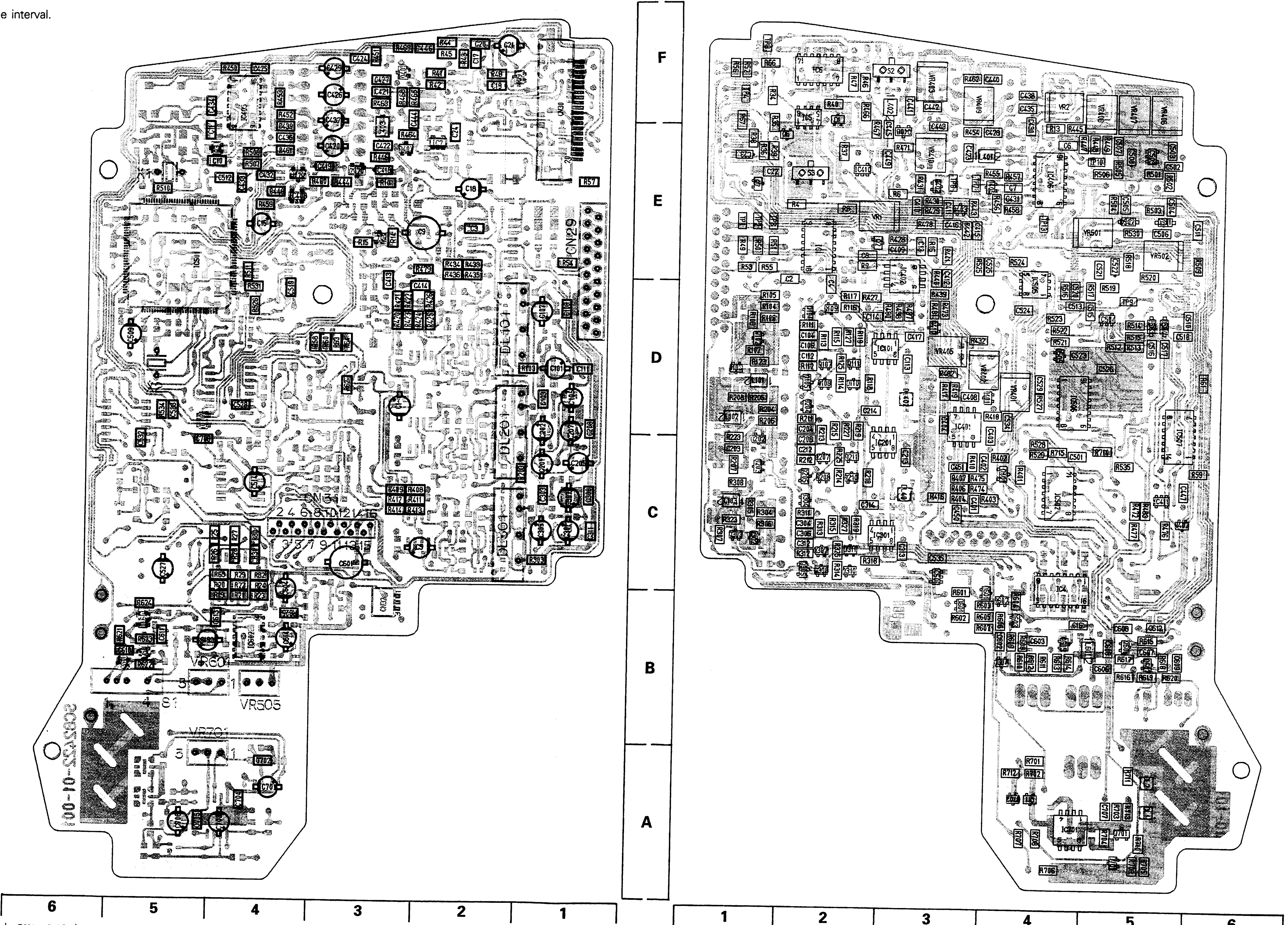
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

A-1C
Side — Y axis — X axis

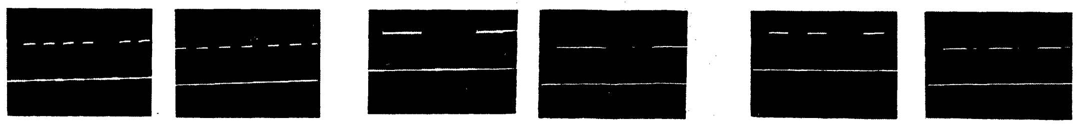
— Component Side (A) —

— Soldered Side (B) —

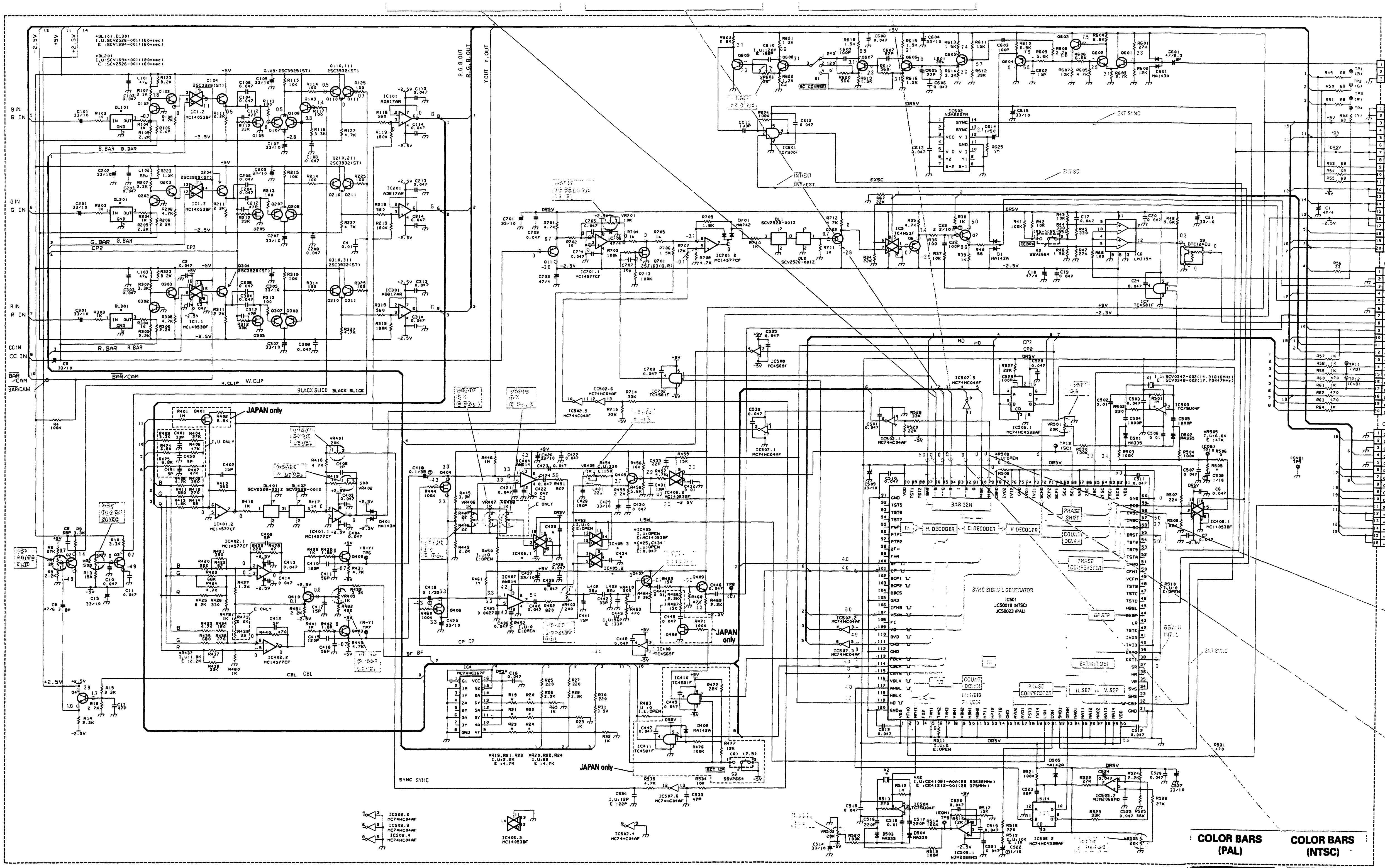


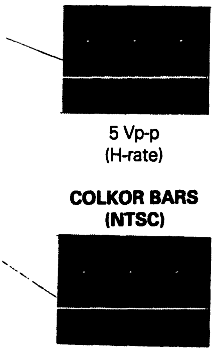
IC1	B- 2E
IC4	B- 5C
IC5	B- 2F
IC6	B- 1F
IC7	A- 2F
IC101	B- 3D
IC201	B- 3D
IC301	B- 3C
IC401	B- 3D
IC402	B- 3E
IC404	A- 3F
IC405	A- 4F
IC406	B- 4F
IC407	A- 4F
IC408	A- 4E
IC410	B- 2E
IC411	B- 5C
IC501	A- 5E
IC502	B- 4C
IC503	B- 5F
IC504	B- 5D
IC505	B- 4E
IC506	B- 4D
IC507	B- 6D
IC508	B- 3C
IC601	A- 5B
IC602	A- 4B
IC701	B- 5A
IC702	A- 5D
Q6	B- 1F
Q2	B- 2E
Q3	A- 5F
Q4	A- 3E
Q9	A- 1F
Q11	B- 4A
Q102	B- 1D
Q103	B- 1D
Q104	B- 2D
Q105	B- 2D
Q107	B- 2D
Q108	B- 2D
Q109	B- 2E
Q110	B- 2D
Q111	B- 2D
Q202	B- 1D
Q203	B- 1C
Q204	B- 2D
Q205	B- 2C
Q207	B- 2C
Q208	B- 2C
Q210	B- 2C
Q211	B- 2C
Q302	B- 1C
Q303	B- 1C
Q304	B- 2C
Q305	B- 2C
Q307	B- 2C
Q308	B- 2C
Q310	B- 2C
Q311	B- 2C
Q401	B- 4C
Q402	B- 3E
Q403	B- 3E
Q404	A- 3E
Q405	B- 4E
Q406	A- 4E
Q407	A- 3F
Q408	B- 3F
Q409	A- 3F
Q410	B- 3D
Q601	B- 4C
Q602	B- 4B
Q603	B- 4B
Q604	B- 4B
Q605	B- 4B
Q606	B- 5B
Q607	B- 5B
Q608	A- 6B
Q609	A- 5B
Q701	B- 5A
Q702	B- 4A
Q7	B- 1E
D1	B- 2F
D401	B- 4D
D402	B- 6C
D501	B- 5E
D502	B- 5E
D503	B- 5D
D504	B- 5D
D505	B- 4D
D601	B- 3B
D701	B- 5A
R4	B- 1E
R6	B- 2E
R8	B- 2E
R9	B- 2E
R10	A- 3E
R13	B- 4F
R14	A- 3E
R15	A- 3E
R16	B- 3E
R19	A- 4B
R20	A- 4C
R21	A- 4B
R22	A- 4C
R23	A- 4B
R24	A- 4C
R25	A- 5C
R26	A- 5C
R27	A- 4C
R28	A- 4C
R29	A- 4C
R30	A- 4C
R31	A- 4C
R32	A- 4C
R34	B- 1F
R35	B- 1F
R36	B- 1F
R37	B- 2F
R38	B- 1F
R39	B- 1F
R40	B- 2F
R41	A- 2F
R42	A- 2F
R43	A- 2F
R44	A- 2F
R45	A- 2F
R46	B- 2F
R47	B- 2F
R48	A- 2F
R49	B- 1E
R50	B- 1E
R51	B- 1E
R52	B- 1F
R53	B- 1E
R54	A- 1E
R55	B- 1E
R56	B- 1F
R57	A- 1E
R58	A- 4D
R59	B- 6C
R60	A- 3D
R61	B- 6D
R62	A- 3D
R63	A- 3D
R64	A- 3D
R65	A- 4C
R66	B- 1F
R67	B- 1F
R103	A- 1D
R104	B- 1E
R105	B- 1E
R106	B- 1D
R107	B- 1D
R108	B- 1D
R111	B- 2D
R112	B- 2D
R113	B- 2D
R114	B- 2D
R115	B- 2D
R116	B- 2E
R117	B- 2E
R118	B- 2D
R119	B- 2D
R123	B- 1D
R125	B- 2D
R127	B- 2D
R203	A- 1C
R204	B- 1D
R205	B- 1D
R206	B- 1D
R207	B- 1C
R208	B- 1D
R211	B- 2D
R212	B- 2C
R213	B- 2D
R214	B- 2C
R215	B- 2D
R218	B- 2C
R219	B- 2D
R223	B- 1D
R225	B- 2C
R227	B- 2D
R303	A- 1C
R304	B- 1C
R305	B- 1C
R306	B- 1C
R307	B- 1C
R308	B- 1C
R311	B- 2C
R312	B- 2C
R313	B- 2C
R314	B- 2C
R315	B- 2C
R318	B- 2C
R319	B- 2C
R323	B- 1C
R325	B- 2C
R327	B- 2C
R401	B- 4C
R402	B- 4C
R403	B- 4C
R404	B- 3C
R406	B- 3C
R407	B- 3C
R408	A- 2C
R409	A- 3C
R410	B- 3C
R411	A- 2C
R412	A- 3C
R413	A- 2C
R414	A- 3C
R416	B- 3C
R417	B- 3D
R418	B- 4D
R419	B- 3D
R424	A- 2D
R426	A- 2E
R425	A- 2D
R420	A- 3D
R421	A- 3E
R423	A- 3D
R422	A- 3E
R427	B- 2E
R428	B- 3E
R429	B- 3E
R430	B- 3E
R431	B- 3E
R432	B- 3D
R433	A- 2E
R434	A- 2E
R435	A- 2E
R436	A- 2E
R437	B- 3D
R438	B- 3D
R439	B- 3E
R440	B- 3E
R441	B- 3E
R442	B- 3E
R443	B- 3E
R444	A- 3E
R445	B- 4F
R446	A- 3F
R447	B- 4F
R448	B- 5F
R449	B- 5F
R450	A- 4F
R451	A- 3F
R452	A- 4F
R453	A- 4F
R454	B- 3F
R455	B- 4E
R456	B- 4E
R457	B- 4E
R458	B- 4E
R459	A- 4E
R460	A- 4E
R461	A- 4F
R462	B- 3F
R463	A- 3F
R464	A- 3F
R465	A- 3F
R466	B- 2F
R467	B- 2F
R468	A- 3F
R469	A- 3F
R471	B- 3F
R472	B- 5C
R473	B- 3D
R474	B- 3C
R475	B- 3C
R476	B- 5C
R477	B- 5C
R478	B- 3E
R479	A- 2E
R480	B- 2D
R481	B- 3D
R482	B- 3D
R483	B- 5C
R501	B- 5E
R502	B- 5E
R503	B- 5E
R504	B- 5E
R505	B- 5E
R506	B- 5E
R507	A- 4E
R508	A- 4F
R509	B- 6E
R510	A- 5E
R511	A- 4E
R512	B- 5D
R513	B- 5D
R514	B- 5D
R515	B- 5D
R516	B- 4E
R517	B- 5E
R518	B- 5E
R519	B- 5E
R520	B- 5E
R521	B- 4D
R522	B- 4D
R523	B- 4D
R524	B- 4E
R525	B- 3E
R526	A- 4D
R527	B- 4D
R528	B- 4D
R529	B- 4D
R530	B- 5E
R531	A- 4E
R534	A- 5D
R535	B- 5C
R601	B- 3C
R602	B- 3B
R603	B- 4B
R604	B- 4B
R605	B- 4B
R606	B- 4B
R607	B- 4B
R608	B- 4B
R609	B- 4B
R610	B- 4B
R611	B- 4B
R612	B- 4B
R613	B- 4B
R614	B- 4B
R615	B- 5B
R616	B- 5B
R617	B- 5B
R618	B- 5B
R619	B- 5B
R620	B- 5B
R621	A- 6B
R622	A- 5B
R623	A- 5B
R624	A- 5B
R625	A- 4B
R715	B- 4D
R701	B- 4A
R702	B- 4A
R703	B- 5A
R704	B- 5A
R705	B- 5A
R706	B- 4A
R707	B- 4A
R708	B- 4A
R709	B- 5A
R710	B- 5A
R711	B- 5A
R712	B- 4A
R713	B- 5A
R714	B- 5D
VR1	B- 2E
VR2	B- 4F
VR401	B- 4D
VR402	B- 3D
VR403	B- 3F
VR405	B- 3D
VR406	B- 5F
VR407	B- 5F
VR408	B- 5F
VR409	B- 3F
VR410	B- 3F
VR501	B- 5E
VR502	B- 5E
VR505	A- 4B
VR601	A- 4B
VR701	A- 4A
C446	A- 2F
C1	A- 3D
C2	B- 1E
C3	A- 2E
C4	B- 2E
C5	A- 2C
C6	B- 4F
C7	B- 4E
C8	B- 2E
C9	A- 2E
C10	A- 5E
C11	A- 5F
C13	B- 3E
C15	A- 4E
C16	B- 4B
C17	A- 2F
C18	A- 2E
C19	A- 2F
C20	A- 2F
C21	A- 2F
C22	B- 1E
C23	B- 1F
C24	A- 2F
C101	A- 1D
C105	A- 1D
C103	A- 1D
C104	B- 2D
C106	B- 2D
C107	A- 1D
C108	A- 1D
C111	A- 1D
C112	B- 2D
C113	B- 3D
C114	B- 2D
C201	A- 1C
C202	A- 1D
C203	B- 1D
C204	B- 2D
C205	A- 1C
C206	B- 2D
C207	A- 1D
C208	A- 1D
C212	B- 2D
C213	B- 3C
C214	B- 2D
C301	A- 1C
C303	A- 1C
C304	B- 2C
C305	A- 1C
C306	B- 2C
C307	A- 1C
C308	A- 1C
C311	A- 1C
C312	B- 2C
C313	B- 3C
C314	B- 2C
C401	B- 3C
C402	B- 3C
C403	B- 4D
C404	B- 3D
C408	B- 3D
C409	B- 3E
C410	B- 3E
C411	B- 3E
C412	B- 3E
C413	A- 3E
C414	A- 2E
C415	B- 3E
C416	B- 3E
C417	B- 3D
C418	A- 3E
C419	A- 3E
C420	A- 3F
C421	A- 3F
C422	A- 3F
C423	B- 3F
C424	A- 3F
C425	A- 4F
C426	A- 3F
C427	A- 3F
C428	B- 4F
C429	A- 3F
C430	B- 4F
C431	B- 4E
C432	A- 4E
C433	A- 4E
C434	A- 5F
C435	B- 4F
C436	A- 4F
C437	A- 3F
C438	B- 4F
C439	A- 4F
C440	B- 3F
C441	B- 3F
C443	B- 3F
C444	A- 3F
C442	B- 3F
C445	B- 2F
C447	B- 6C
C448	A- 4E
C449	B- 2F
C450	B- 3C
C451	B- 3C
C519	A- 4E
C533	A- 5D
C535	B- 3C
C614	A- 4B
C501	B- 4C
C502	B- 5F
C503	B- 5F
C504	B- 5E
C505	B- 5E
C506	B- 5E
C507	B- 5F
C508	B- 5F
C509	A- 5D
C510	B- 6D
C511	B- 6E
C512	A- 5E
C513	B- 4E
C514	A- 4C
C515	B- 5E
C516	B- 5D
C517	B- 5D
C518	B- 6D
C520	B- 4E
C521	B- 5E
C522	B- 5E
C523	B- 4D
C524	B- 4E
C525	B- 3E
C526	B- 5D
C527	A- 5C
C528	A- 4D
C529	B- 4D
C532	A- 5D
C534	B- 4D
C601	A- 3C
C602	B- 4B
C603	B- 4B
C604	A- 4B
C605	B- 5B
C606	B- 5B
C607	B- 5B
C608	B- 5B
C609	B- 6B
C610	A- 6B
C611	A- 5B
C612	B- 5B
C613	A- 5B
C615	A- 5B
C701	A- 4A
C702	A- 4A
C703	A- 4A
C704	A- 4A
C705	A- 5A
C706	A- 5A
C708	A- 5D
C707	B- 5A
L101	B- 1D
L102	B- 1D
L103	B- 1C
L401	B- 3F
L402	B- 2F
L403	A- 3F
L601	B- 5B
DL1	B- 5A
DL2	B- 5A
DL101	A- 1E
DL201	A- 1D
DL301	A- 1C
DL401	B- 3C
DL402	B- 3D
TP1	B- 1E
TP2	B- 1E
TP3	B- 1E
TP4	B- 1F
TP5	A- 6B
TP6	B- 3E
TP7	B- 3E
TP8	B- 1F
TP9	B- 5E
TP10	B- 5F
TP11	A- 6B
TP12	A- 6B
TP13	B- 4E
S1	A- 6B
S2	B- 2F
S3	B- 2E
CN29	A- 1E
CN30	A- 1F
CN31	A- 4C
CN32	A- 3B
X1	A- 5E
X2	A- 5D

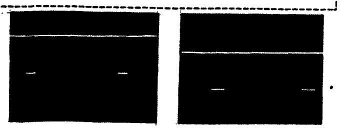
3.23 SE BOARD SCHEMATIC DIAGRAM 5 8


COLOR BARS (PAL) 5.0 Vp-p H-rate
COLOR BARS (NTSC) 5 Vp-p H-rate
COLOR BARS (PAL) 5 Vp-p H-rate
COLOR BARS (NTSC) 5 Vp-p H-rate
COLOR BARS (PAL) 5 Vp-p H-rate
COLOR BARS (NTSC) 5 Vp-p (H-rate)

Main Functions of SE board
- White clipping
- Black slicing
- Blanking mix
- R-Y/B-Y signal switching
- Y, C signal output
- Sync signal generation
- Genlock


B IN
G IN
R IN
CC IN
BAR/CAM
B.BAR
G.BAR
R.BAR
H.CLIP
V.CLIP
BLACK SLICE
R.G.B OUT
Y OUT
JAPAN only
H.DECODER
C.DECODER
V.DECODER
BARGEN
SYNC SIGNAL GENERATOR
IC501 JCS0018 (NTSC) JCS0023 (PAL)
SYNC
CN32
CN29 (TO HT)
CN30 (TO HT)
CN31 (TO CC)


COLOR BARS (NTSC) 5 Vp-p (H-rate)
COLKOR BARS (NTSC) 5 Vp-p (H-rate)


COLOR BARS (PAL) 5 Vp-p (H-rate)
COLOR BARS (NTSC) 5 Vp-p (H-rate)

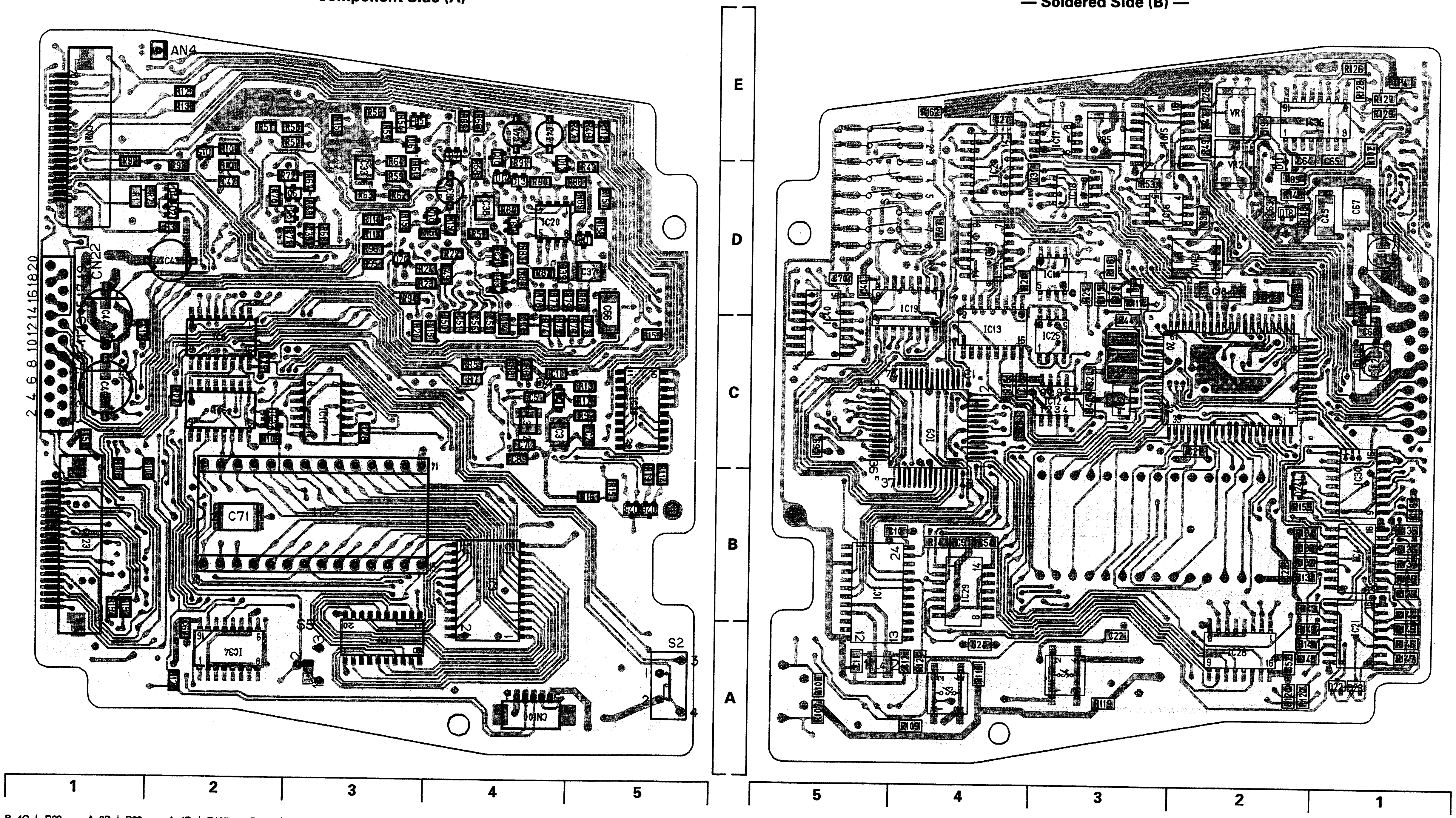
NOTE
UNLESS OTER WISE/SPECIFIED
NPN TRANSISTORS : 2SC3930(B.C)
PNP TRANSISTORS : 2SA1532(B.C)
FTES : 2SK374(Q.R)

The parts marked by * are open.

3.24 CP CIRCUIT BOARD

●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.



— Component Side (A) —

— Soldered Side (B) —

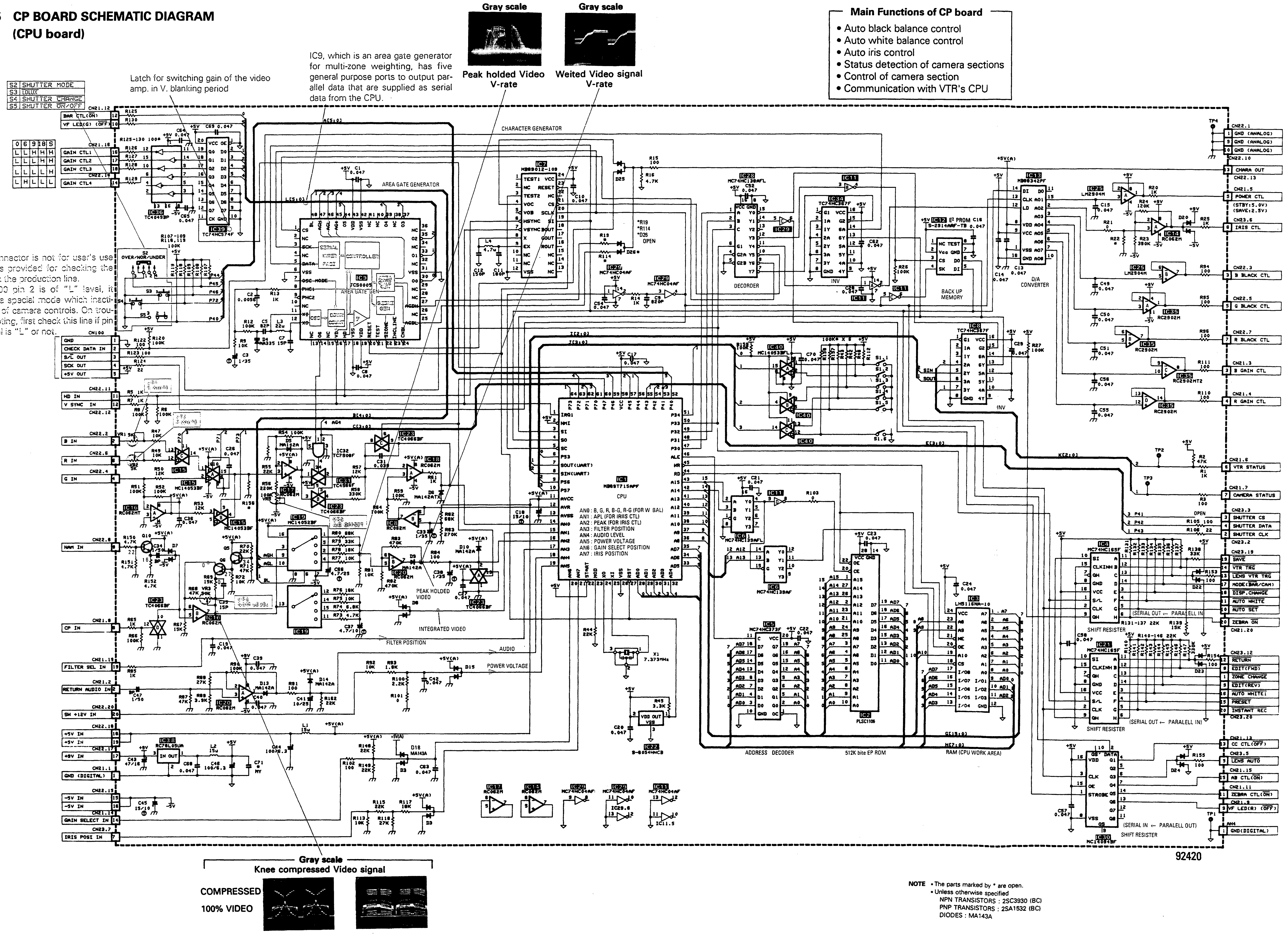
IC1	B- 2C
IC2	A- 2B
IC3	A- 4A
IC4	B- 1B
IC5	A- 3A
IC6	A- 2C
IC7	B- 5B
IC8	A- 2C
IC9	B- 4C
IC11	A- 3C
IC12	B- 3C
IC13	B- 4D
IC14	B- 3D
IC15	B- 3E
IC16	B- 2D
IC17	B- 3E
IC18	B- 3E
IC19	B- 4D
IC20	A- 4D
IC21	B- 1B
IC22	B- 3C
IC23	B- 4E
IC25	B- 3D
IC28	B- 2A
IC29	B- 4B
IC30	B- 1C
IC31	A- 4D
IC32	A- 4D
IC34	A- 2A
IC35	B- 4D
IC36	B- 2E
IC37	A- 2C
IC38	B- 1D
IC39	A- 5C
IC40	B- 5D
Q5	A- 2D
Q6	A- 2D
Q10	A- 3D
D1	A- 1D
D2	A- 1D
D3	B- 3D
D4	A- 4C
D5	A- 3E
D6	A- 3E
D7	A- 4E
D8	A- 5D
D9	A- 4D
D10	A- 4E
D11	B- 2E
D12	A- 4E
D13	A- 4E
D14	A- 4E
D15	A- 2E
D18	B- 2D
D20	A- 3D
D22	B- 1A
D23	B- 1A
D24	B- 1B
D25	A- 5B
D26	A- 5B

R1	A- 1D	R26	B- 4C	R62	A- 3D	R82	A- 4D	R107	B- 5A	R128	B- 1E	R148	B- 2E	C1	A- 4C	C23	B- 2B	C46	A- 1C	C71	A- 2B	CN100	A- 4A
R2	A- 1D	R27	A- 2C	R63	A- 3D	R83	A- 4D	R108	B- 5A	R129	B- 1E	R149	B- 1D	C2	A- 5C	C24	B- 4A	C47	A- 4E				
R3	A- 1D	R42	A- 5E	R64	A- 3E	R84	A- 4D	R109	B- 4A	R130	A- 2E	R150	A- 3D	C3	A- 4C	C26	B- 2E	C49	A- 4D	L1	B- 1D	S1	B- 5E
R5	A- 4C	R43	A- 5E	R65	A- 4E	R85	B- 2E	R110	A- 3D	R131	B- 1B	R151	A- 3D	C5	A- 4C	C27	B- 4E	C50	A- 4D	L2	B- 1C	S2	A- 5A
R6	A- 4C	R44	B- 3D	R66	A- 4E	R87	B- 4D	R111	A- 3D	R132	B- 1B	R152	A- 4D	C7	A- 4C	C28	A- 3C	C51	A- 4D	L3	A- 4C	S3	B- 4A
R7	A- 4C	R45	B- 3C	R67	A- 3E	R88	A- 5E	R112	A- 5E	R133	B- 1B	R153	A- 1B	C8	A- 4C	C29	A- 2C	C52	B- 2A	L4	B- 5A	S4	B- 3A
R8	A- 4C	R46	A- 5E	R68	A- 3D	R89	A- 5D	R113	B- 3D	R134	B- 1B	R154	A- 1B	C9	B- 4B	C31	B- 3E	C54	B- 4B			S5	A- 3A
R9	A- 5C	R47	B- 2E	R69	A- 3D	R90	A- 4E	R114	A- 5B	R135	B- 1B	R155	B- 1B	C10	B- 5B	C33	A- 3E	C55	A- 4D	TP1	A- 5B		
R12	A- 5C	R49	B- 2E	R70	A- 2D	R91	A- 4E	R115	B- 3D	R136	B- 1B	R156	A- 3E	C11	B- 5A	C34	A- 4D	C56	A- 4D	TP2	B- 2D		
R13	A- 5C	R50	A- 2E	R71	A- 2D	R92	A- 1E	R116	B- 3D	R137	B- 1B	R157	A- 5D	C12	B- 4A	C35	A- 3D	C57	A- 1C	TP3	B- 1D		
R14	B- 4B	R51	A- 2E	R72	A- 2E	R93	A- 2E	R117	B- 3D	R138	B- 1B	R158	A- 5D	C13	A- 4D	C36	B- 2D	C58	B- 1B	TP4	B- 1E		
R15	A- 5B	R52	A- 2E	R73	A- 5D	R94	A- 3D	R118	B- 4A	R139	B- 1B	R159	A- 5C	C14	A- 4D	C37	A- 5D	C62	A- 2A	TP5	B- 4C		
R16	A- 5B	R53	B- 3E	R74	A- 4D	R95	A- 3D	R119	B- 3A	R140	B- 1A	R162	B- 4E	C15	A- 3C	C38	A- 4D	C63	B- 2D				
R19	A- 5B	R54	A- 3E	R75	A- 4D	R96	A- 3D	R120	B- 2A	R141	B- 1A	R163	B- 1C	C16	B- 4C	C39	A- 4D	C64	B- 1E	X1	B- 3C		
R20	A- 3C	R55	A- 3E	R76	A- 5D	R100	A- 2E	R122	B- 1A	R142	B- 1A			C17	A- 1C	C40	B- 5D	C65	B- 1E				
R21	B- 4D	R56	A- 3E	R77	A- 4D	R101	A- 2E	R123	A- 2A	R143	B- 1B	VR1	B- 2E	C18	B- 2D	C41	A- 4E	C66	A- 5D	AN4	A- 1E		
R22	A- 4D	R57	A- 4D	R78	A- 4D	R102	B- 1E	R124	B- 4A	R144	B- 1B	VR2	B- 2E	C19	B- 2E	C42	A- 2E	C67	B- 1D				
R23	A- 3D	R58	A- 4E	R79	A- 4D	R103	A- 2C	R125	A- 2E	R145	B- 1B	VR3	B- 2D	C20	B- 3C	C43	A- 1D	C68	B- 1D	CN21	A- 1E		
R24	A- 3D	R59	A- 3E	R80	A- 4D	R105	A- 1C	R126	B- 1E	R146	B- 1A	VR5	B- 3E	C21	B- 2C	C44	A- 1D	C69	B- 5C	CN22	A- 1C		
R25	B- 3D	R61	A- 3E	R81	A- 5D	R106	A- 1C	R127	B- 1E	R147	B- 1A			C22	B- 3A	C45	B- 1D	C70	B- 5D	CN23	A- 1B		

3.25 CP BOARD SCHEMATIC DIAGRAM (CPU board)

Main Functions of CP board

- Auto black balance control
- Auto white balance control
- Auto iris control
- Status detection of camera sections
- Control of camera section
- Communication with VTR's CPU



Gray scale
Peak holded Video
V-rate
Gray scale
Weited Video signal
V-rate
S2 SHUTTER MODE
S3 10LUX
S4 SHUTTER CHANGE
S5 SHUTTER ON/OFF
BAR CTL(ON)
VF LED(G) (OFF)
GAIN CTL1
GAIN CTL2
GAIN CTL3
GAIN CTL4
TC4049BP
TC74HC574F
AREA GATE GENERATOR
SERIAL INTER FACE
CONTROLLER
AREA GATE GEN
CHARACTER GENERATOR
MB88012-105
DECORDER
MC74HC138AFL
TC74HC367F
INV
E² PROM
BACK UP MEMORY
MB88342PF
D/A CONVERTER
LM2904M
RC062M
RC2902M
OVER/NOR/UNDER
CN100
GND
CHECK DATA IN
S/L OUT
SCK OUT
+5V OUT
HD IN
V SYNC IN
B IN
R IN
G IN
NAM IN
CP IN
FILTER SEL IN
RETURN AUDIO IN
SW +12V IN
+5V IN
+5V IN
+8V IN
GND (DIGITAL)
-5V IN
-5V IN
GAIN SELECT IN
IRIS POSI IN
MC14053BF
TC4066BF
TC7S08F
TC4S66F
MC14052BF
PEAK HOLDED VIDEO
INTEGRATED VIDEO
FILTER POSITION
AUDIO
POWER VOLTAGE
RC78L05UA
MB89715APF
CPU
AN0 : B, G, R, B-G, R-G (FOR W BAL)
AN1 : APL (FOR IRIS CTL)
AN2 : PEAK (FOR IRIS CTL)
AN3 : FILTER POSITION
AN4 : AUDIO LEVEL
AN5 : POWER VOLTAGE
AN6 : GAIN SELECT POSITION
AN7 : IRIS POSITION
7.373MHz
S-8054HNCB
MC14053BFL
MC74HC373F
PLSC1106
LH5116NA-10
ADDRESS DECODER
512K bite EP ROM
RAM (CPU WORK AREA)
GND (ANALOG)
GND (ANALOG)
GND (ANALOG)
CHARA OUT
POWER CTL
(STBY:5.0V)
(SAVE:2.5V)
IRIS CTL
B BLACK CTL
G BLACK CTL
R BLACK CTL
B GAIN CTL
R GAIN CTL
VTR STATUS
CAMERA STATUS
SHUTTER CS
SHUTTER DATA
SHUTTER CLK
SAVE
VTR TRG
LENS VTR TRG
MODE(BAR/CAM)
DISP. CHANGE
AUTO WHITE
AUTO SET
ZEBRA ON
MC74HC165F
(SERIAL OUT ← PARALELL IN)
SHIFT RESISTER
RETURN
EDIT(FWD)
ZONE CHANGE
EDIT(REV)
AUTO WHITE
PRESET
INSTANT REC
CC CTL(OFF)
LENS AUTO
AB CTL(ON)
ZEBRA CTL(ON)
VF LED(R) (OFF)
GND(DIGITAL)
MC14094BF
(SERIAL IN ← PARALELL OUT)
Gray scale
Knee compressed Video signal
COMPRESSED
100% VIDEO
H-rate
V-rate
92420

Latch for switching gain of the video amp. in V. blanking period

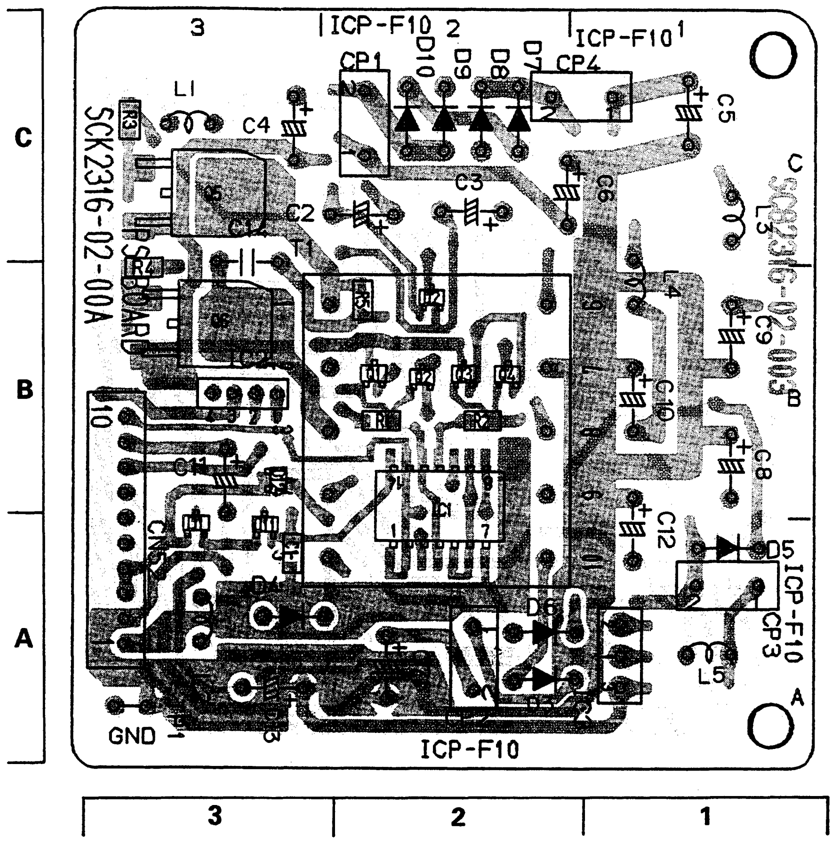
IC9, which is an area gate generator for multi-zone weighting, has five general purpose ports to output parallel data that are supplied as serial data from the CPU.

This connector is not for user's use and it is provided for checking the board in the production line.
If CN100 pin 2 is of "L" level, it makes a special mode which inactivate all of camera controls. On troubleshooting, first check this line if pin 2's level is "L" or not.

*R19
*R114
*D25
OPEN

NOTE
- The parts marked by * are open.
- Unless otherwise specified
  NPN TRANSISTORS : 2SC3930 (BC)
  PNP TRANSISTORS : 2SA1532 (BC)
  DIODES : MA143A

3.26 PS CIRCUIT BOARD


ICP-F10 2
ICP-F10 1
CP1
D10
D9
D8
D7
CP4
C5
L1
C4
C3
C6
C2
C1
T1
R1
R2
R3
R4
R5
Q5
IC2
IC1
L3
L4
C9
C10
C8
C11
C12
D1
D2
D5
D6
ICP-F10
CP3
L5
GND
SCK2316-02-00A
PS BOARD
10
C
B
A
3
2
1

●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

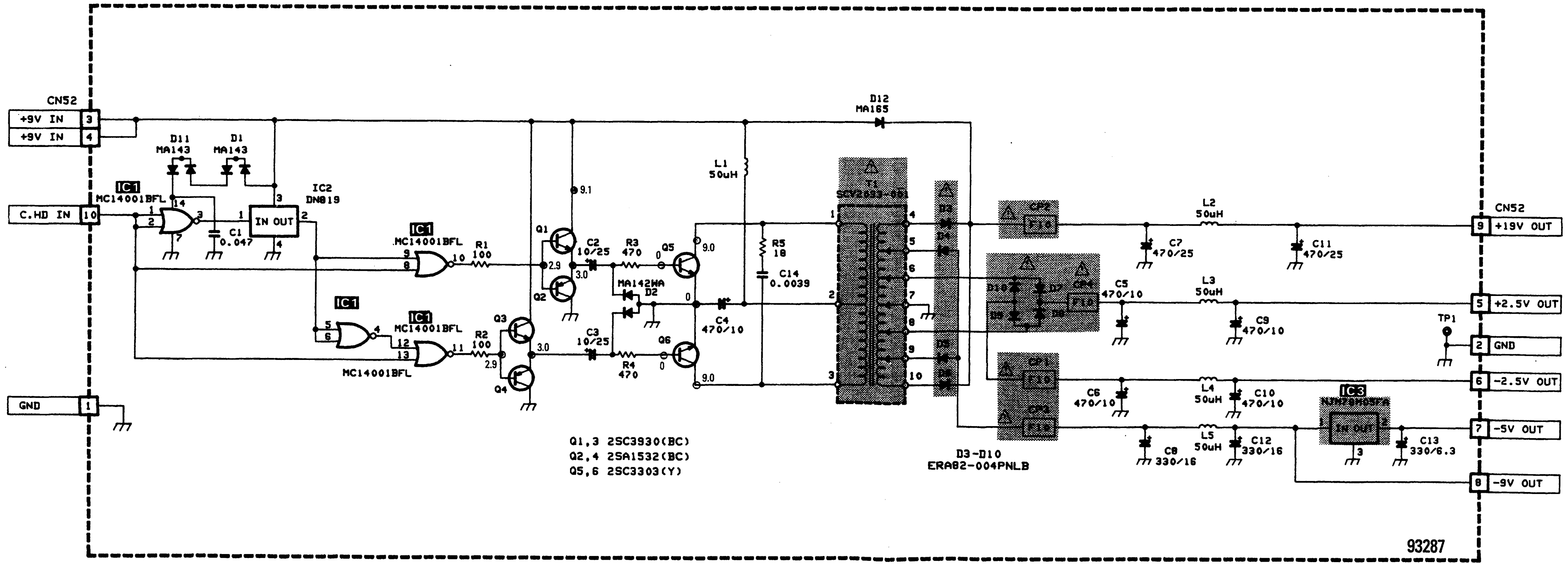
A-1C
Side
Y axis
X axis

IC1	2B
IC2	3B
IC3	1A
Q1	2B
Q2	2B
Q3	2B
Q4	2B
Q5	3C
Q6	3B
D1	3A
D2	2B
D3	1A
D4	2A
D5	1A
D6	1A
D7	2C
D8	2C
D9	2C
D10	2C
D11	3A
D12	3B
R1	2B
R2	2B
R3	3C
R4	3B
R5	2B
C1	3A
C2	2C
C3	2C
C4	3C
C5	1C
C6	2C
C7	2A
C8	1B
C9	1B
C10	1B
C11	3B
C12	1B
C13	3A
C14	3C
L1	3C
L2	3A
L3	1C
L4	1B
L5	1A
TP1	3A
T1	2B
CN52	3A
CP1	2C
CP2	2A
CP3	1A
CP4	1C

3.27 PS BOARD SCHEMATIC DIAGRAM 60

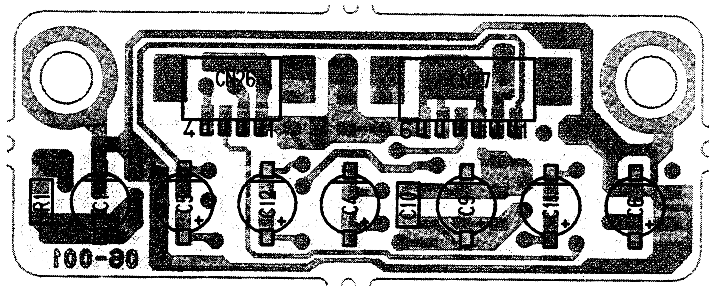
(Power Supply board)

- Shaded (⚠) parts are critical for safety. Replace only with specified part numbers.

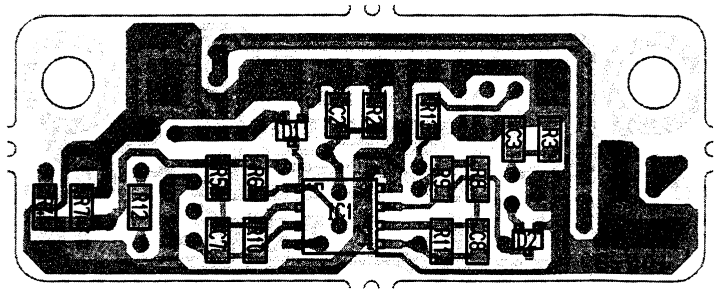

CN52
+9V IN 3
+9V IN 4
C.HD IN 10
GND 1
D11 MA143
D1 MA143
IC1 MC14001BFL
C1 0.047
IC2 DN819
IN OUT
R1 100
R2 100
MC14001BFL
Q1
Q2
Q3
Q4
Q5
Q6
9.1
2.9
3.0
9.0
0
C2 10/25
C3 10/25
R3 470
R4 470
MA142WA D2
C4 470/10
L1 50uH
R5 18
C14 0.0039
D12 MA165
T1
D3
D4
D5
D6
D7
D8
D9
D10
CP1
CP2
CP3
CP4
F10
D3-D10 ERA82-004PNLB
L2 50uH
L3 50uH
L4 50uH
L5 50uH
C5 470/10
C6 470/10
C7 470/25
C8 330/16
C9 470/10
C10 470/10
C11 470/25
C12 330/16
C13 330/6.3
IC3
TP1
CN52
9 +19V OUT
5 +2.5V OUT
2 GND
6 -2.5V OUT
7 -5V OUT
8 -9V OUT
93287

Q1,3 2SC3930(BC)
Q2,4 2SA1532(BC)
Q5,6 2SC3303(Y)

3.28 AU CIRCUIT BOARD

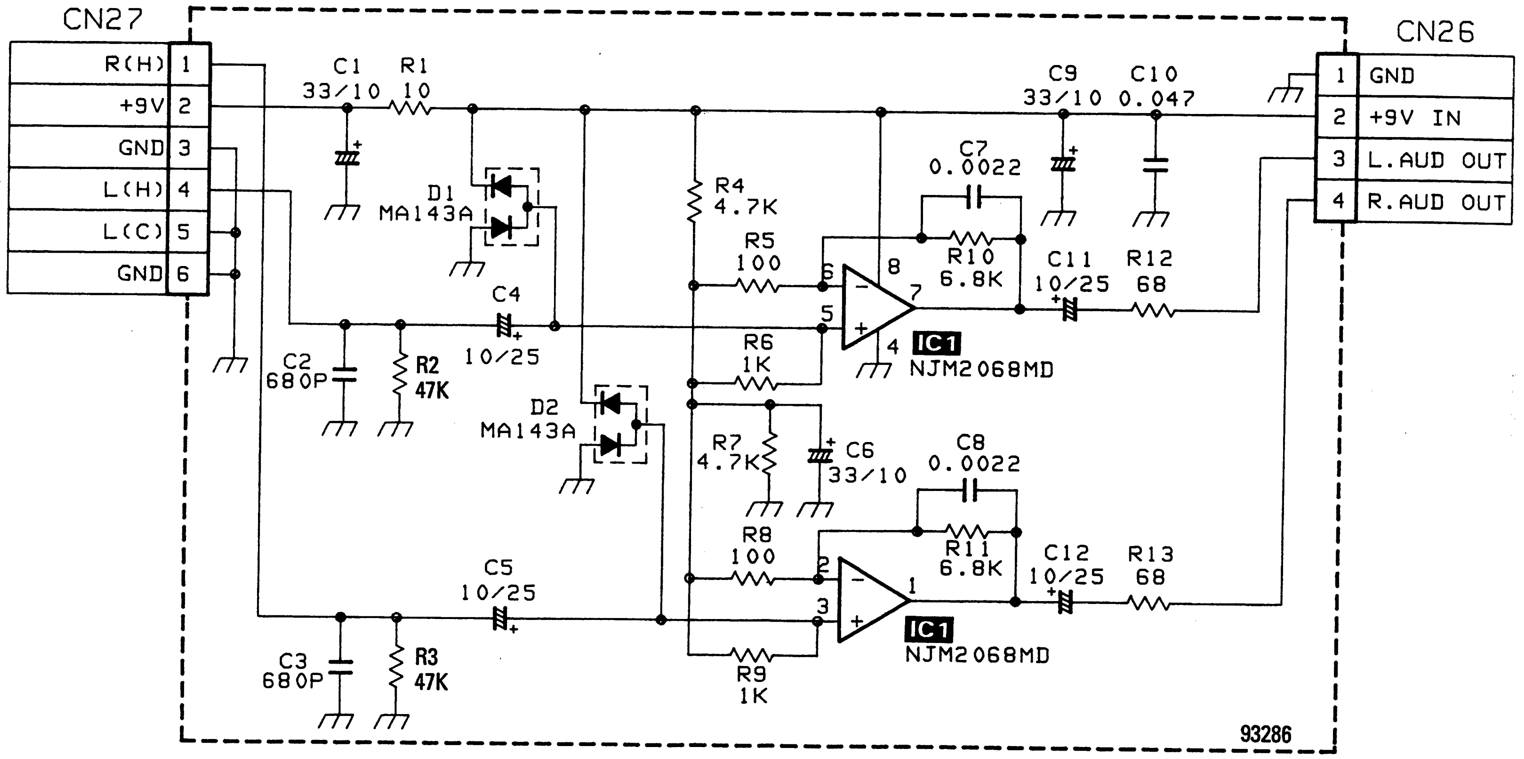


— Component Side (A) —



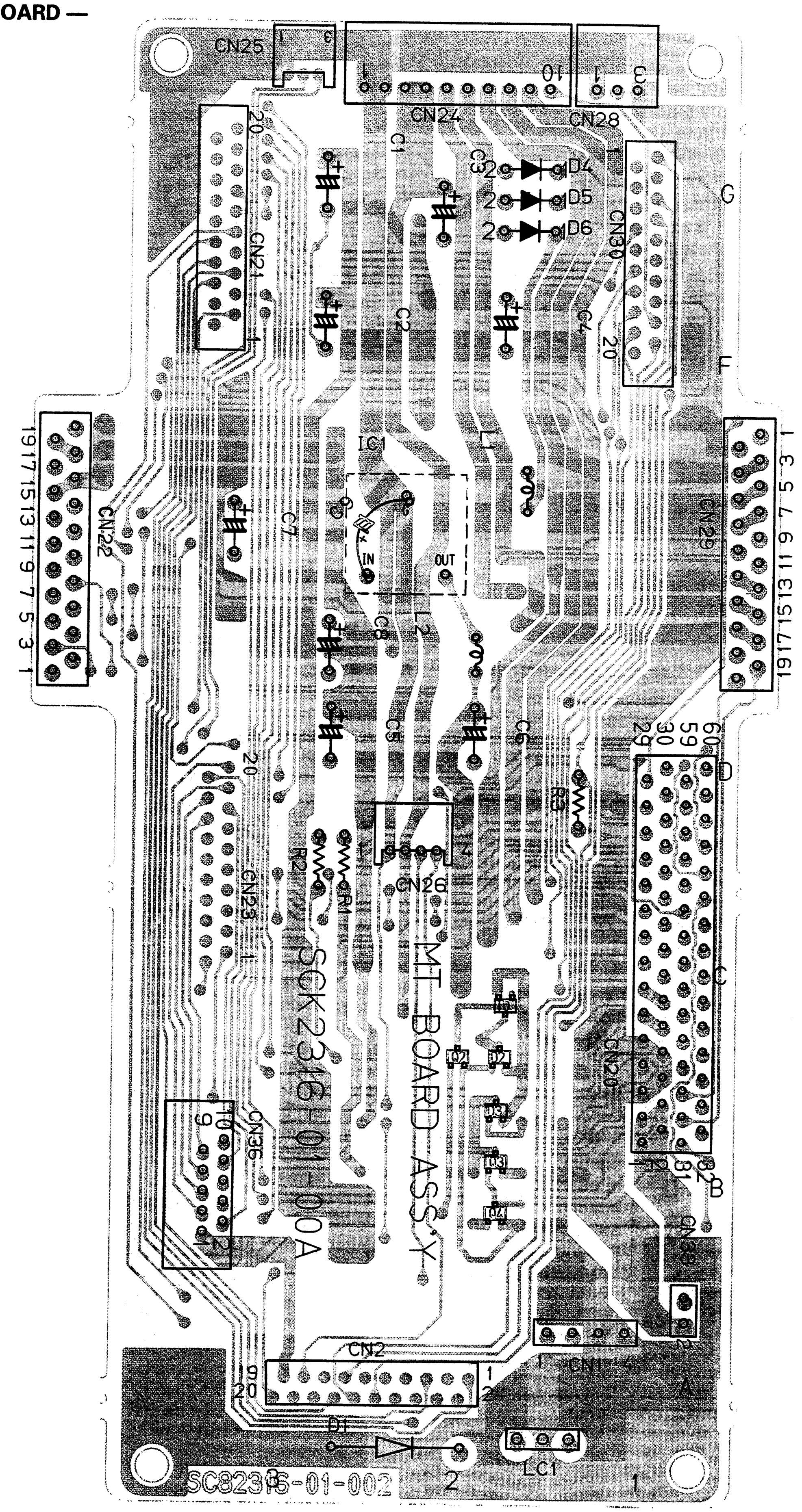
— Soldered Side (B) —

3.29 AU BOARD SCHEMATIC DIAGRAM 6 1 (Audio board)

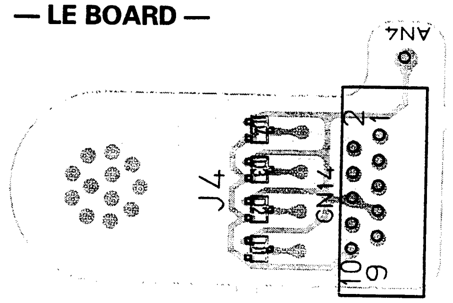

CN27
R(H) 1
+9V 2
GND 3
L(H) 4
L(C) 5
GND 6
C1 33/10
R1 10
C2 680P
R2 47K
C3 680P
R3 47K
C4 10/25
C5 10/25
D1 MA143A
D2 MA143A
R4 4.7K
R5 100
R6 1K
R7 4.7K
C6 33/10
R8 100
R9 1K
C7 0.0022
R10 6.8K
C8 0.0022
R11 6.8K
IC1 NJM2068MD
C9 33/10
C10 0.047
C11 10/25
R12 68
C12 10/25
R13 68
CN26
1 GND
2 +9V IN
3 L.AUD OUT
4 R.AUD OUT
93286

3.30 MT/LE/SW2 CIRCUIT BOARD

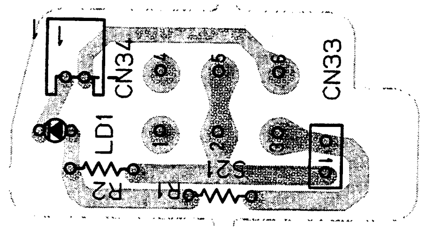
— MT BOARD —


CN25
CN24
CN28
CN21
CN30
CN22
CN29
CN23
CN26
CN20
CN36
CN38
CN2
CN1
IC1
IN
OUT
D1
D4
D5
D6
C1
C2
C3
C4
C5
C6
C7
C8
L1
L2
R1
R2
R3
LC1
MT BOARD ASS'Y
SCK2316-01-00A
SC8236-01-002
A
B
C
D
F
G

— LE BOARD —

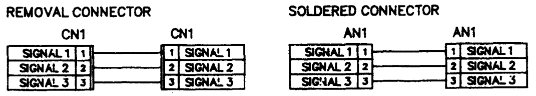


— SW2 BOARD —


CN34
CN33
LD1
R1
R2
S21

3.31 OVERALL WIRINGS (Include MT, REG, LE, SW1~SW5, BNC board Schematic diagram)

NOTE: THE CONNECTIONS OF THIS SCHEMATIC DIAGRAM INDICATES AS FOLLOWS ;

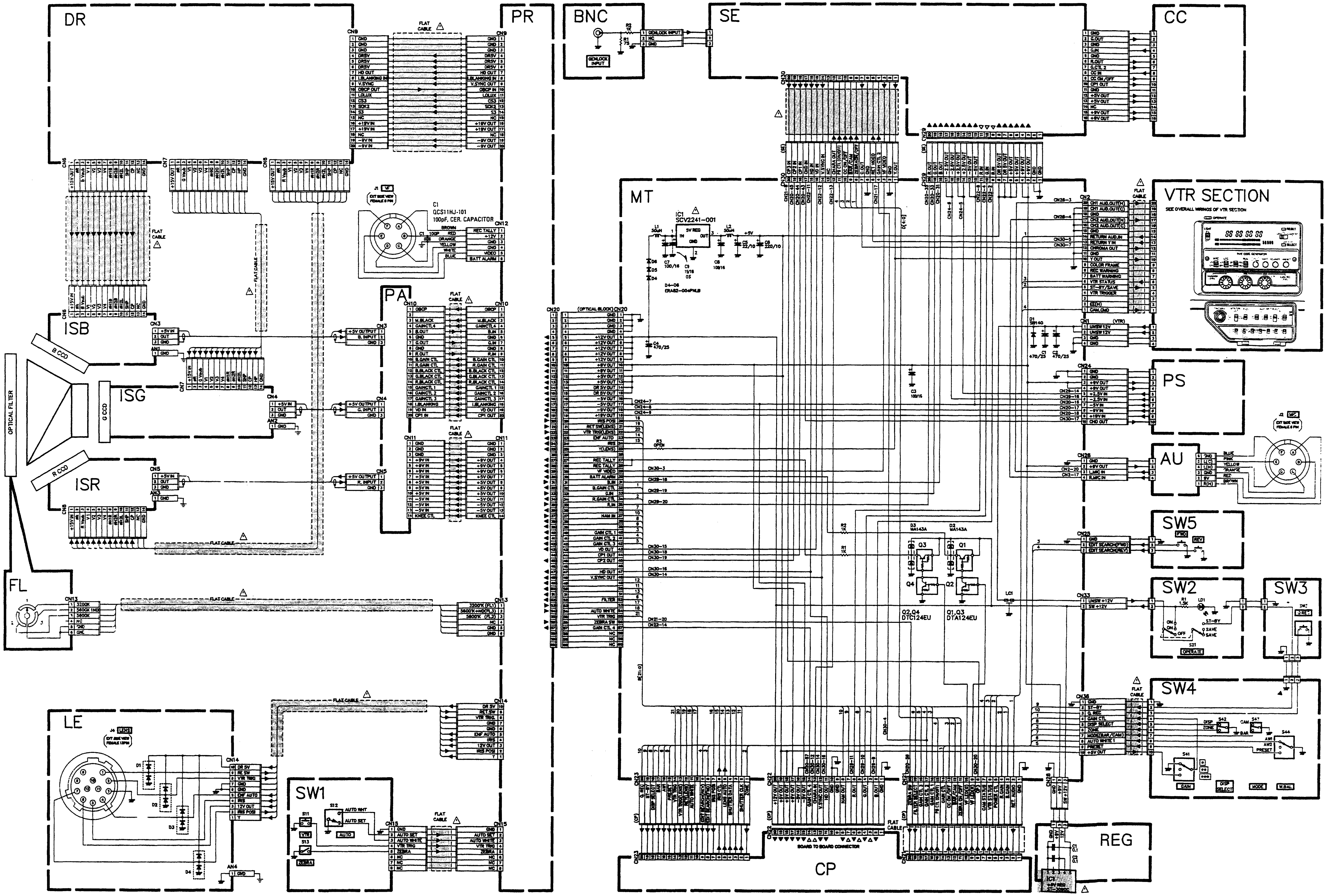

REMOVAL CONNECTOR
SOLDERED CONNECTOR
CN1
CN1
AN1
AN1
SIGNAL 1
SIGNAL 2
SIGNAL 3

- Shaded (⚠) parts are critical for safety.
  Replace only with specified part numbers.

Parts List for Flat cables

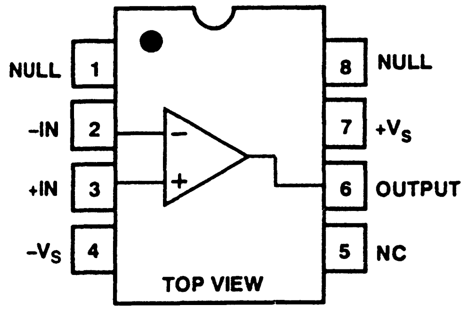
Connection		Part No.
MT board ,CN2	VTR SECTION	PGW0206-120200
DR board ,CN6	ISB board ,CN6	SCV2098-1412R
DR board ,CN7	ISG board ,CN7	SCV2098-1412R
DR board ,CN8	ISR board ,CN8	SCV2098-1412R
DR board ,CN9	PR board ,CN9	SCV2098-2006R
PA board ,CN1	PR board ,CN1	SCV2098-2008K
PA board ,CN1	PR board ,CN1	SCV2098-1408K
FL board ,CN1	PR board ,CN1	SCV2098-0620K

Connection		Part No.
LE board ,CN1	PR board ,CN1	SCV2098-1015K
SW1 board ,CN1	PR board ,CN1	SCV2098-0817K
MT board ,CN2	CP board ,CN2	SCV1902-2006R
MT board ,CN2	CP board ,CN2	SCV1902-2006R
MT board ,CN3	SE board ,CN3	SCV1902-2006R
MT board ,CN3	SW4 board ,CN3	SCV1902-1012R


DR
PR
BNC
SE
CC
ISB
ISG
ISR
PA
OPTICAL FILTER
FL
LE
SW1
MT
VTR SECTION
SEE OVERALL WIRINGS OF VTR SECTION
PS
AU
SW5
SW2
SW3
SW4
CP
REG
FLAT CABLE
GENLOCK INPUT
IC1 SCV2241-001
C1 QCS11HJ-101 100pF, CER. CAPACITOR
Q2,Q4 DTC124EU
Q1,Q3 DTA124EU
BOARD TO BOARD CONNECTOR

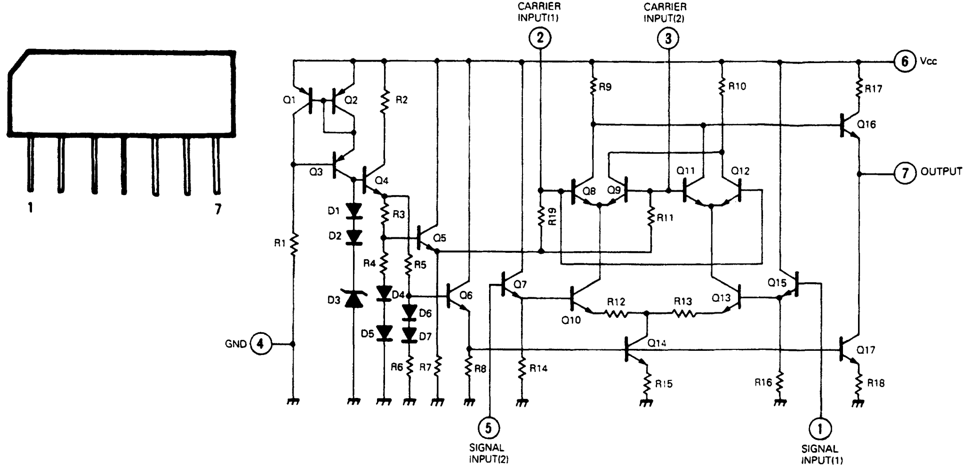
3.32 SCHEMATIC DIAGRAM of IC's

■ AD817AR 【ANALOG DEVICES】
(Hi-Speed Low Power Op.Amp)


NULL
1
–IN
2
+IN
3
–V_S
4
TOP VIEW
NULL
8
+V_S
7
OUTPUT
6
NC
5

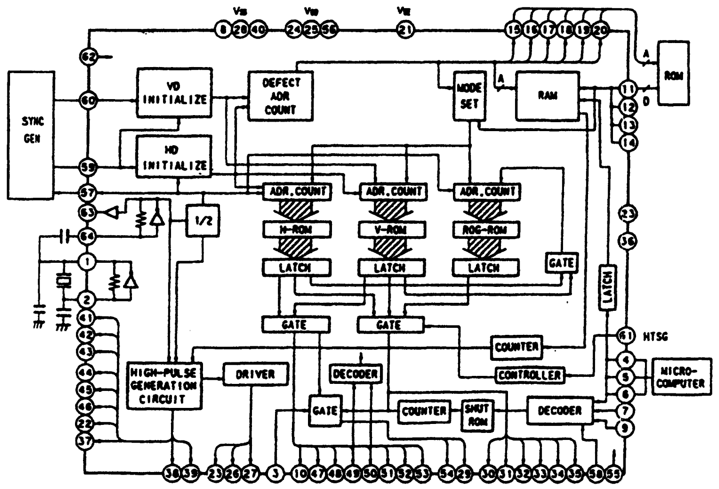
NC = NO CONNECT

■ AN614 【MATSUSHITA】
(Balanced Modulator)


1
7
CARRIER INPUT(1)
2
CARRIER INPUT(2)
3
6 Vcc
7 OUTPUT
GND 4
5 SIGNAL INPUT(2)
1 SIGNAL INPUT(1)
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
D1
D2
D3
D4
D5
D6
D7

AN614 SCHEMATIC DIAGRAM

■ CXD1265R 【SONY】
(CCD Camera Timing Generator)


SYNC GEN
VD INITIALIZE
HD INITIALIZE
DEFECT ADR COUNT
MODE SET
RAM
ROM
ADR. COUNT
H-ROM
V-ROM
ROG-ROM
LATCH
GATE
COUNTER
CONTROLLER
DECODER
SHUT ROM
HIGH-PULSE GENERATION CIRCUIT
DRIVER
1/2
MICRO-COMPUTER
NTSC
A
D

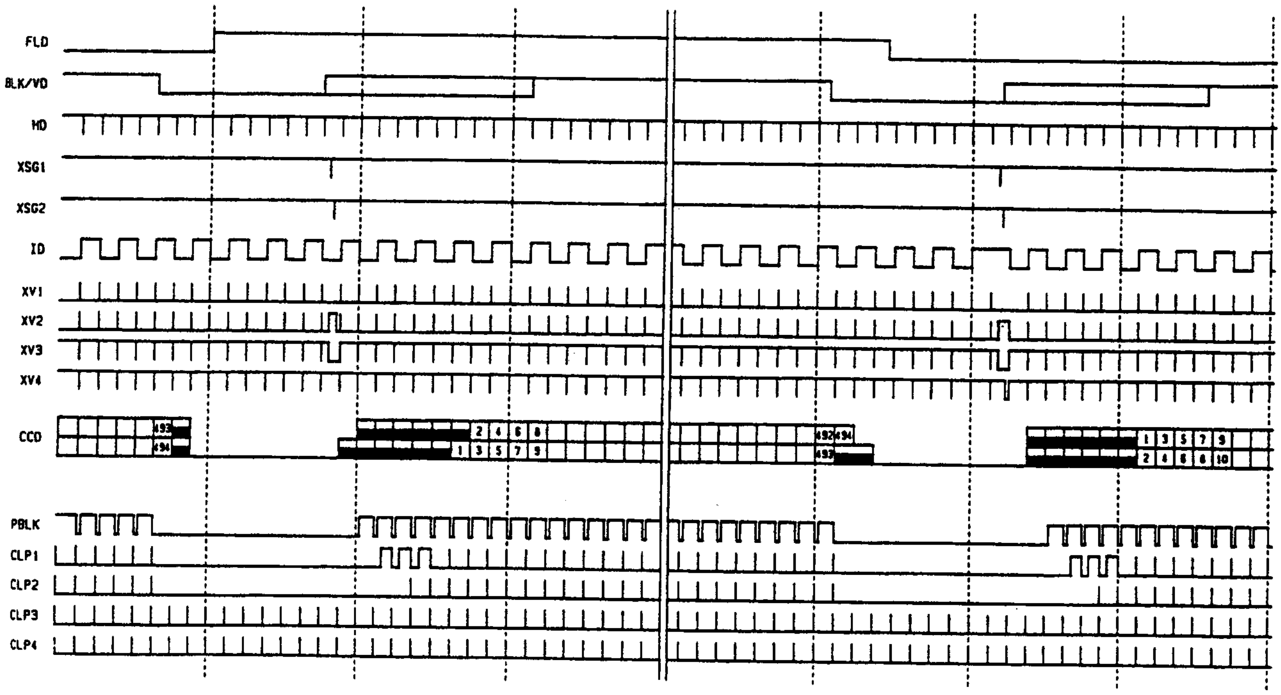
Pin Description

Pin No.	Symbol	I/O	Description
1	OSCO	O	Inverter output for oscillation.
2	OSCI	I	Inverter input for oscillation.
3	EF	I	Input mode select for defect compensation data. (With pull-up resistance) High: External ROM used, Low: Serial input from microcomputer
4	ED0	I	Shutter speed setting. Strobe input for serial mode. (With pull-up resistance)
5	ED1	I	Shutter speed setting. Clock input for serial mode. (With pull-up resistance)
6	ED2	I	Shutter speed setting. Data input for serial mode. (With pull-up resistance)
7	SMD1	I	Shutter mode setting. (With pull-up resistance)
8	Vss	–	GND
9	SMD2	I	Shutter mode setting. (With pull-up resistance)
10	XVCT	O	External ROM power supply control.
11	D1	I	When using external ROM, data input. (With pull-down resistance) When not using, Low: No defect compensation; High: Defect compensation enabled.
12	D2	I	When using external ROM, data input. (With pull-down resistance) When not using, Low: Color; High: Black-and-white.
13	D3	I	When using external ROM, data input. (With pull-down resistance) When not using, fixed at Low.
14	D4	I	When using external ROM, data input. (With pull-down resistance) When not using, Low: NTSC; High: PAL.
15	A5	O	External ROM address output.
16	A4	O	External ROM address output.
17	A3	O	External ROM address output.
18	A0	O	External ROM address output.
19	A1	O	External ROM address output.
20	A2	O	External ROM address output.
21	VEE	–	GND
22	RG	O	Reset gate pulse output.
23	LH1	–	CCD horizontal register final-step clock output.
24	VDD	–	Power supply.
25	VDD	–	Power supply for H1 and H2.
26	H1	O	Clock output for CCD horizontal register.
27	H2	O	Clock output for CCD horizontal register.
28	Vss	–	GND for H1 and H2.
29	XSUB	O	CCD discharge pulse output.
30	XV2	O	Clock output for CCD vertical register.
31	XV1	O	Clock output for CCD vertical register.
32	XSG1	O	CCD sensor charge readout pulse output.
33	XV3	O	Clock output for CCD vertical register.
34	XSG2	O	CCD sensor charge readout pulse output.
35	XV4	O	Clock output for CCD vertical register.

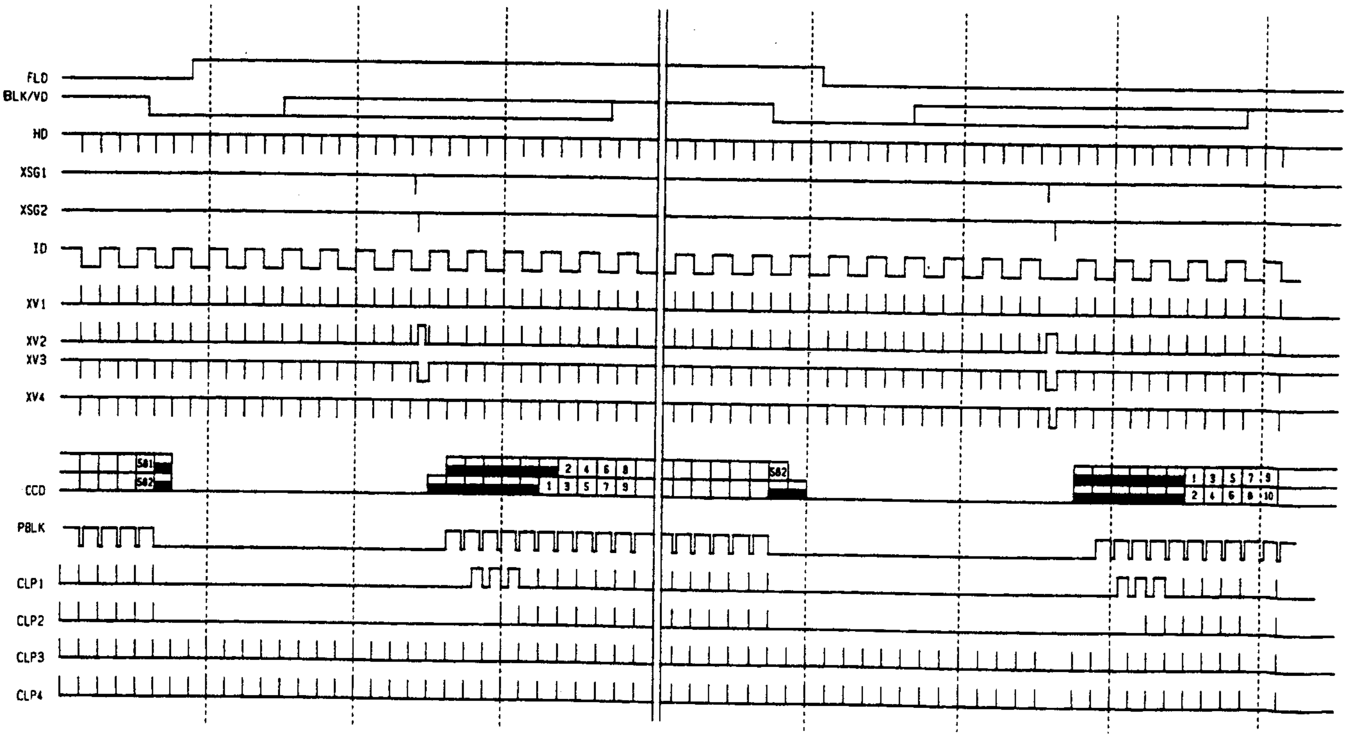
Pin Description

Pin No.	Symbol	I/O	Description
36	TEST2	I	Test input. Set Low in normal operation.
37	CLD	O	4 fsc clock output.
38	XSHP	O	Pulse for sample-and-hold of pre-charge level.
39	XSHD	O	Data sample-and-hold pulse.
40	Vss	–	GND
41	XSP1	O	Color separation sample-and-hold pulse. Halted for black-and-white mode.
42	XSP2	O	Color separation sample-and-hold pulse. Halted for black-and-white mode.
43	XSH1/ SHP	O	Switching sample-and-hold pulse/pre-charge level sample-and-hold pulse (black-and-white mode)
44	XSH2/ SHD	O	Switching sample-and-hold pulse/data sample-and-hold pulse (black-and-white mode)
45	XDL1	O	Delay line clock output. Halted for black-and-white mode.
46	XDL2	O	Delay line clock output. Halted for black-and-white mode.
47	BFG	O	Pulse output for chroma modulator in encoder. When GM is set at High, defect indicator pulse output. Halted for black-and-white mode.
48	CLP1	O	Clamp pulse output.
49	CLP2	IO	Clamp pulse output. When GM is set at High, standby mode switching input.
50	CLP3	IO	Clamp pulse output. When GM is set at High, standby mode switching input.
51	CLP4	O	Clamp pulse output.
52	PBLK	O	Blanking cleaning pulse output.
53	ID	O	Line identification output. Halted for black-and-white mode.
54	WEN	O	Write enable output for low-speed shutter operation.
55	GM	I	Low: Analog signal processing; High: Digital signal processing. (With pull-down resistance)
56	VDD	–	Power supply.
57	CL	O	4 fsc clock output.
58	PS	I	Switching for electronic shutter speed input method. (With pull-up resistance)Low: Serial input; High: Parallel input
59	HD	I	Horizontal synchronizing signal input.
60	VD	I	Vertical synchronizing signal input. (Low period is 9H for NTSC/EIA and 7.5H for PAL/CCIR.)
61	HTSG	I	Control input for XSG1and XSG2. (With pull-up resistance) Low: XSG1, XSG2 halted; High: XSG1, XSG2 generated.
62	TEST	I	Test input. Set at Low during normal operation. (With pull-down resistance)
63	XCK	O	8 fsc clock output.
64	CK	I	8 fsc clock input

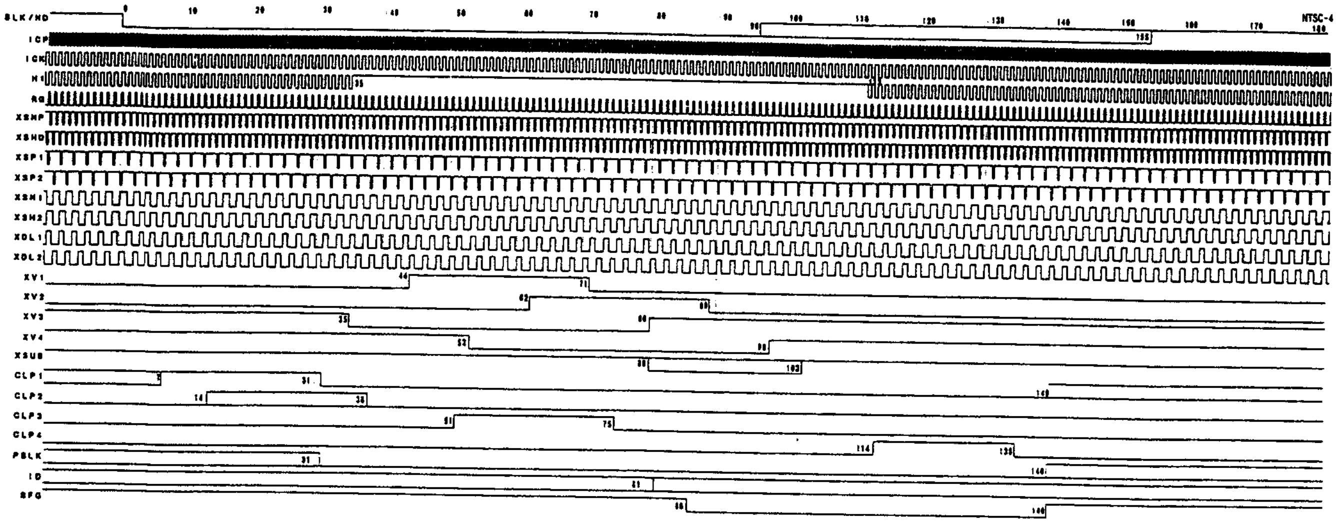
Time Chart (1) **< NTSC vertical direction >** (However, ID halted for black-and-white mode)


FLD
BLK/VD
HD
XSG1
XSG2
ID
XV1
XV2
XV3
XV4
CCD
493
494
2 4 6 8
1 3 5 7 9
492 494
493
1 3 5 7 9
2 4 6 8 10
PBLK
CLP1
CLP2
CLP3
CLP4

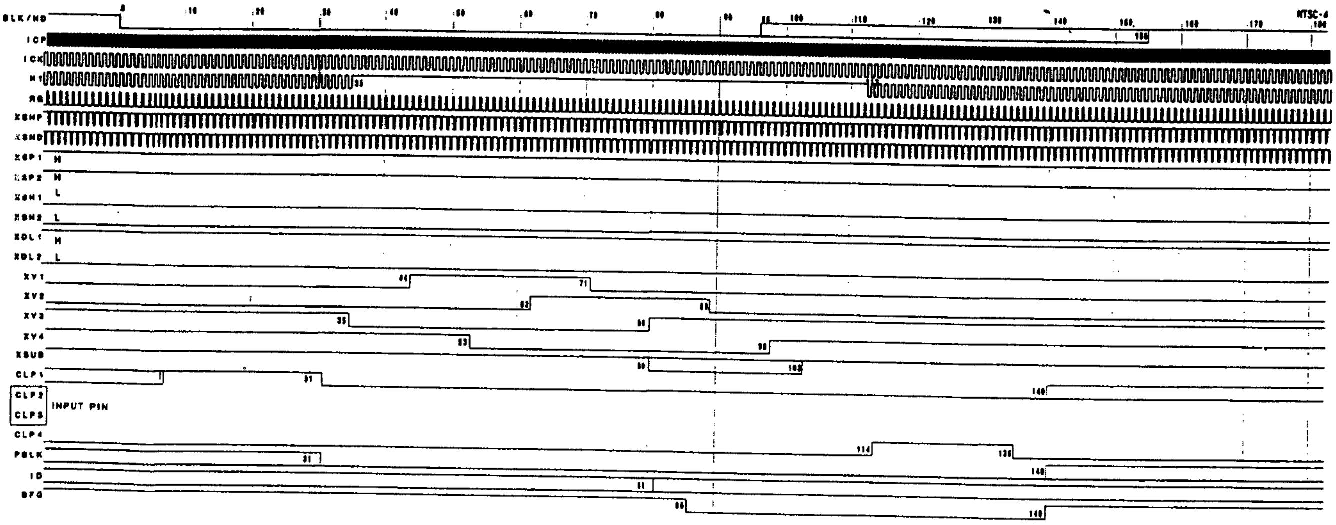
Time Chart (2) **< PAL vertical direction >** (However, ID halted for black-and-white mode)


FLD
BLK/VD
HD
XSG1
XSG2
ID
XV1
XV2
XV3
XV4
581
582
2 4 6 8
1 3 5 7 9
582
1 3 5 7 9
2 4 6 8 10
CCD
PBLK
CLP1
CLP2
CLP3
CLP4

Time Chart (3) < NTSC horizontal direction > Analog color (GM=L, D2=L, TEST2=L)

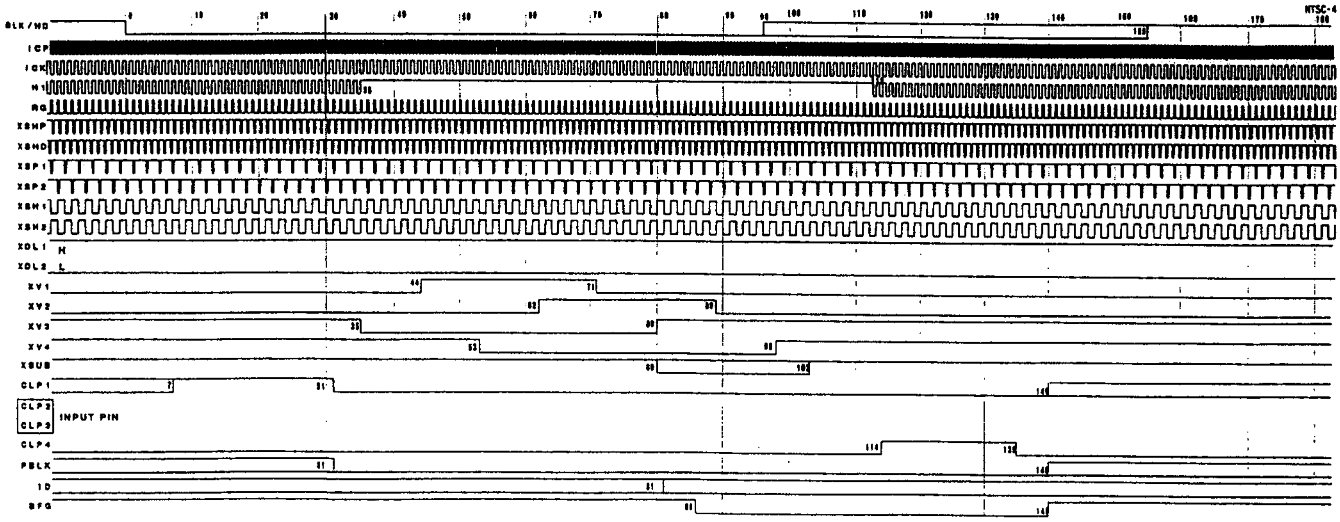

BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1
XDL2
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
CLP4
PBLK
ID
NTSC-4

Time Chart (4) < NTSC horizontal direction > Digital color 1 (GM=H, D2=L, TEST2=L)


BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1 H
XSP2 H
XSH1 L
XSH2 L
XDL1 H
XDL2 L
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
INPUT PIN
CLP4
PBLK
ID
NTSC-4

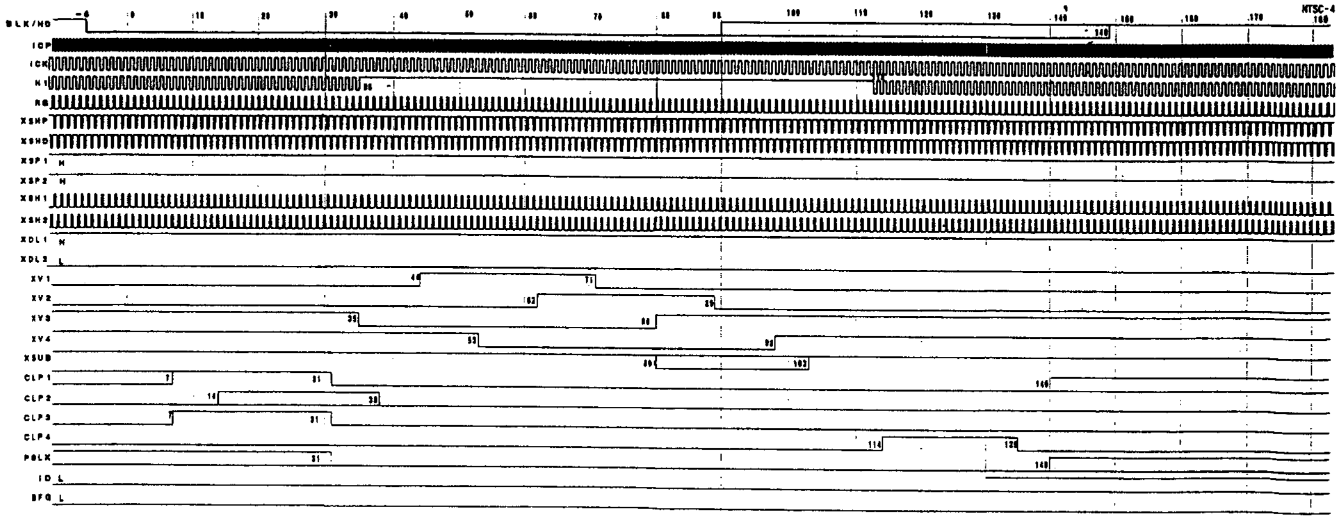
Time Chart (5) < NTSC horizontal direction > Digital color 2

(GM=H, D2=L, TEST2=H)

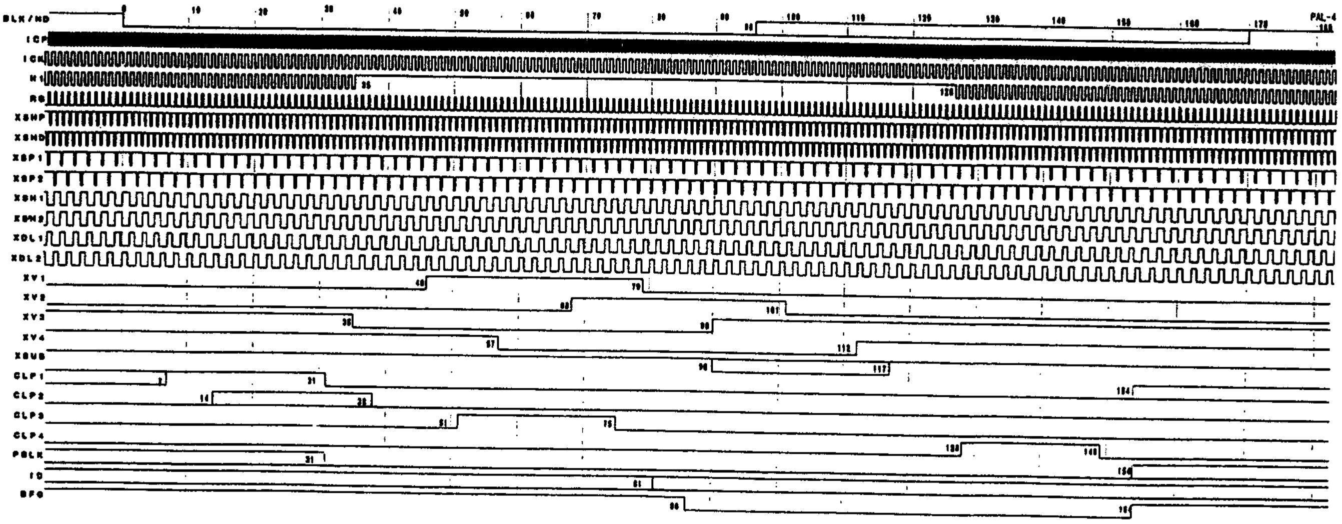

NTSC-4
BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1
H
XDL2
L
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
INPUT PIN
CLP4
PBLK
ID
BFG
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
86
44
71
62
89
35
80
53
98
102
7
31
146
114
128
81
88

Time Chart (6) < NTSC horizontal direction > Analog black-and-white

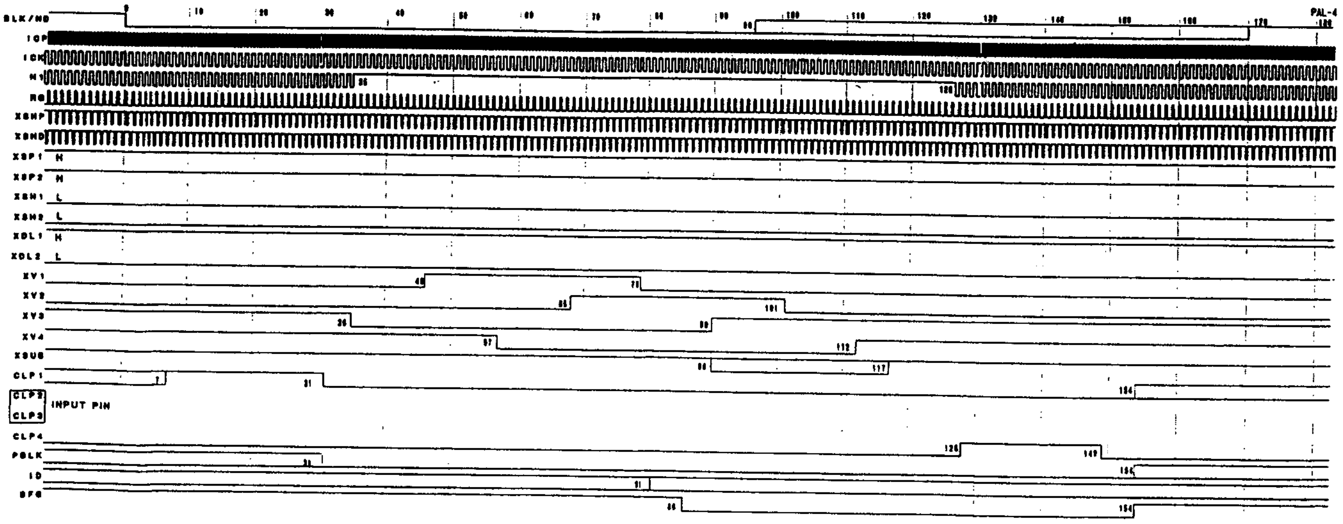
(GM=L, D2=H, TEST2=L)


NTSC-4
BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1
H
XSP2
H
XSH1
XSH2
XDL1
H
XDL2
L
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
CLP4
PBLK
ID
L
BFG
L
-6
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
86
44
71
62
89
35
80
53
98
102
7
31
146
14
114
128

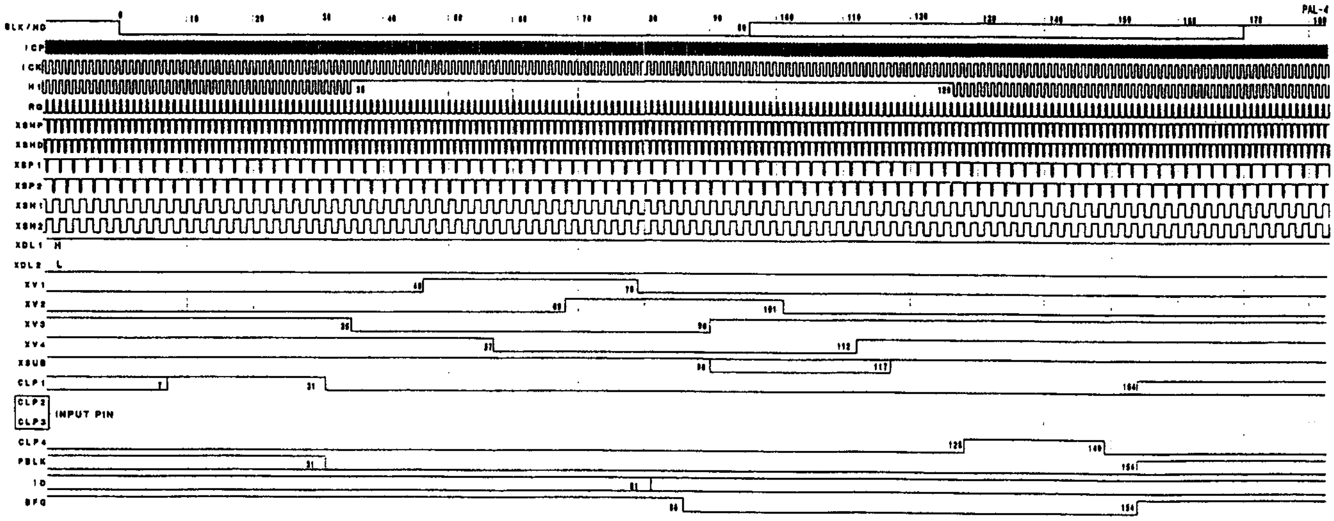
Time Chart (7) **< PAL horizontal direction >** Analog color (GM=L, D2=L, TEST2=L)


BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1
XDL2
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
CLP4
PBLK
ID
BFG
PAL-4

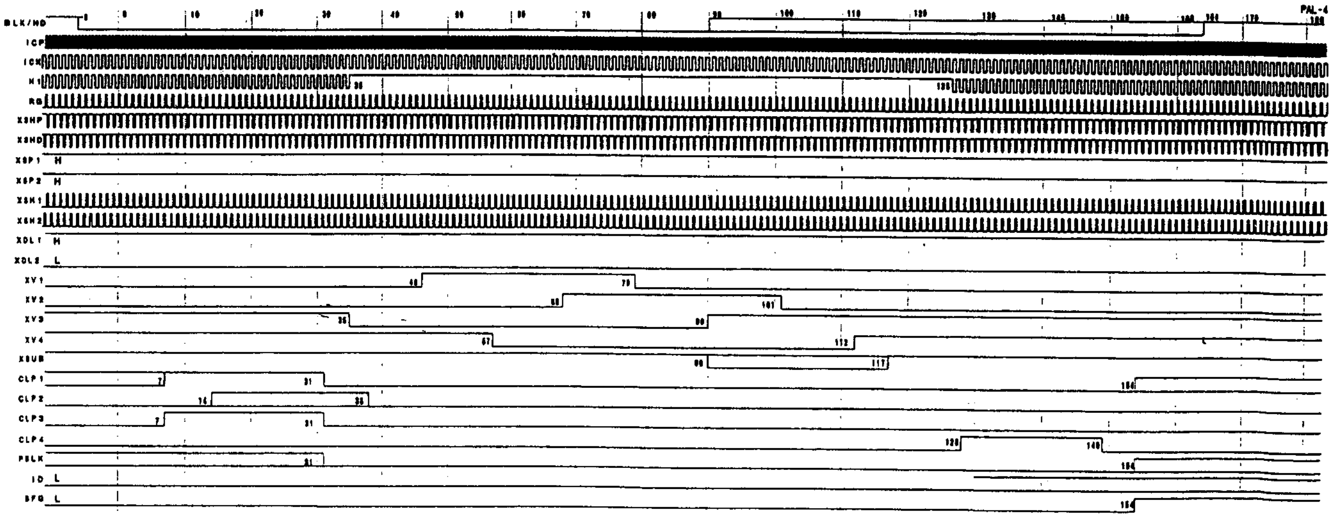
Time Chart (8) **< PAL horizontal direction >** Digital color 1 (GM=H, D2=L, TEST2=L)


BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1 H
XSP2 H
XSH1 L
XSH2 L
XDL1 H
XDL2 L
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
INPUT PIN
CLP4
PBLK
ID
BFG
PAL-4

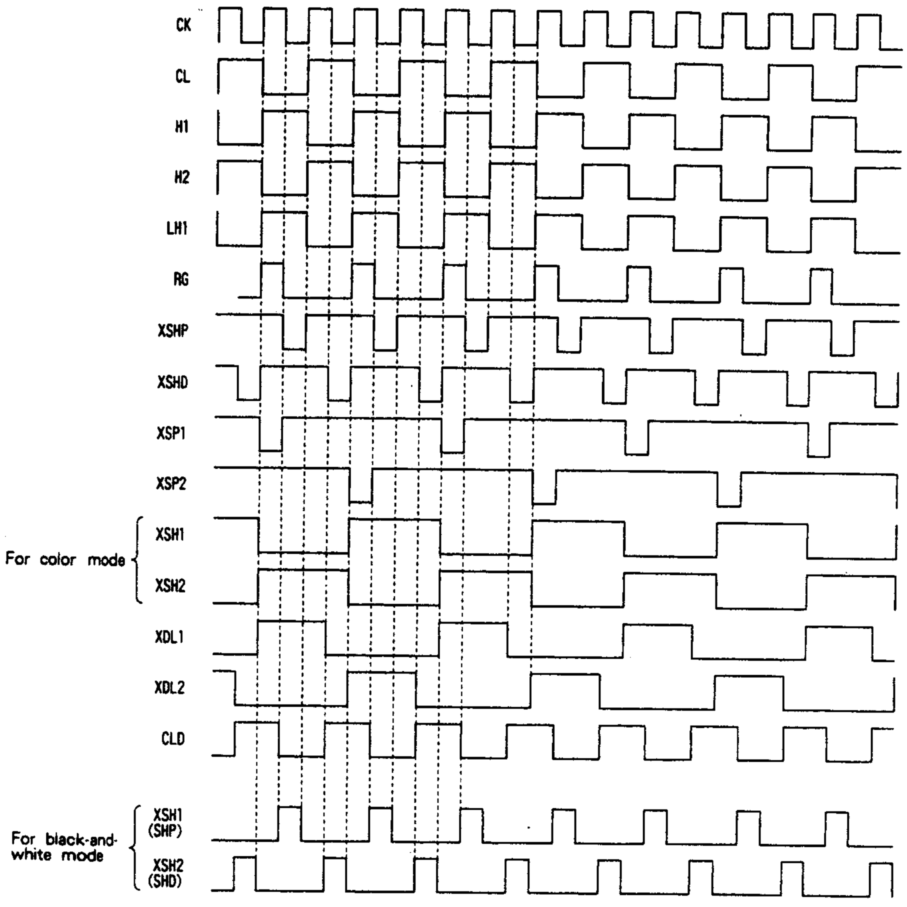
Time Chart (9) **< PAL horizontal direction >** Digital color 2 (GM=H, D2=L, TEST2=H)


PAL-4
BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1 H
XDL2 L
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
INPUT PIN
CLP4
PBLK
ID
BFG

Time Chart (10) **< PAL horizontal direction >** Analog black-and-white (GM=L, D2=H, TEST2=L)

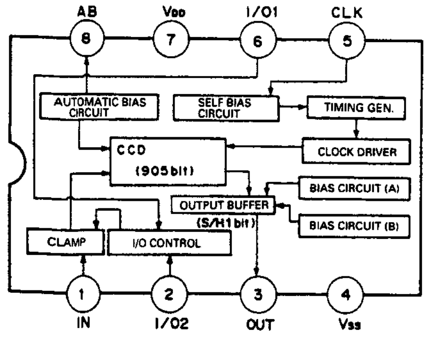

PAL-4
BLK/HD
ICP
ICK
H1
RG
XSHP
XSHD
XSP1 H
XSP2 H
XSH1
XSH2
XDL1 H
XDL2 L
XV1
XV2
XV3
XV4
XSUB
CLP1
CLP2
CLP3
CLP4
PBLK
ID L
BFG L

Time Chart (11) < High speed phase >

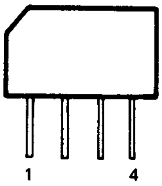


For black-and-white mode, XSP1, XSP2, XDL1, and XDL2 halted.

■ CXL5504M 【SONY】 (CMOS-CCD 1H Delayline For NTSC)

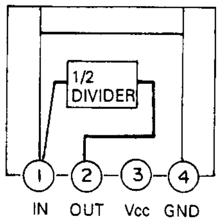

AB
VDD
I/O1
CLK
8
7
6
5
AUTOMATIC BIAS CIRCUIT
SELF BIAS CIRCUIT
TIMING GEN.
CCD (905bit)
CLOCK DRIVER
BIAS CIRCUIT (A)
OUTPUT BUFFER (S/H1 bit)
BIAS CIRCUIT (B)
CLAMP
I/O CONTROL
1
2
3
4
IN
I/O2
OUT
Vss

■ DN819 【MATSUSHITA】 (Integrated Injection Logic Frequency Divider)

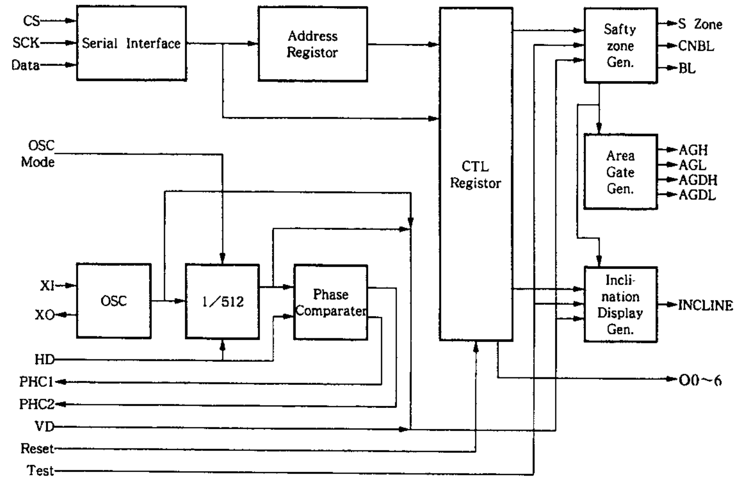


1 : INPUT
2 : OUTPUT
3 : Vcc
4 : GND

DN819 DIVIDER


1/2 DIVIDER
1
2
3
4
IN
OUT
Vcc
GND

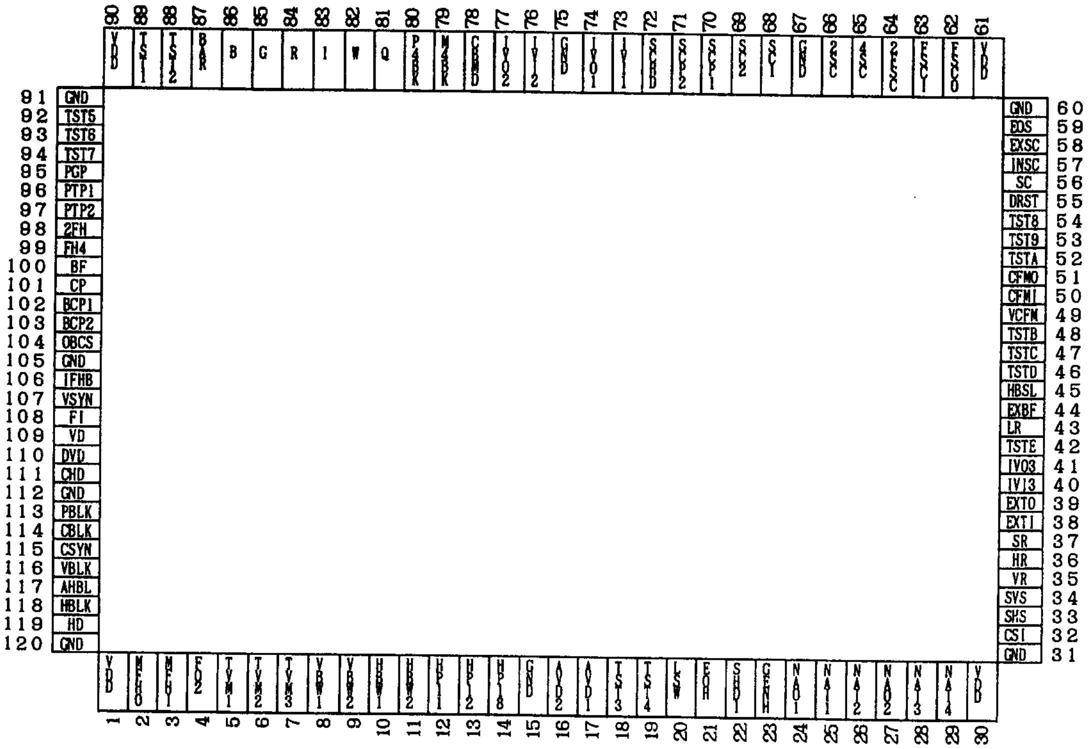
■ JCS0005 【JVC】
(Area Gate Generator)



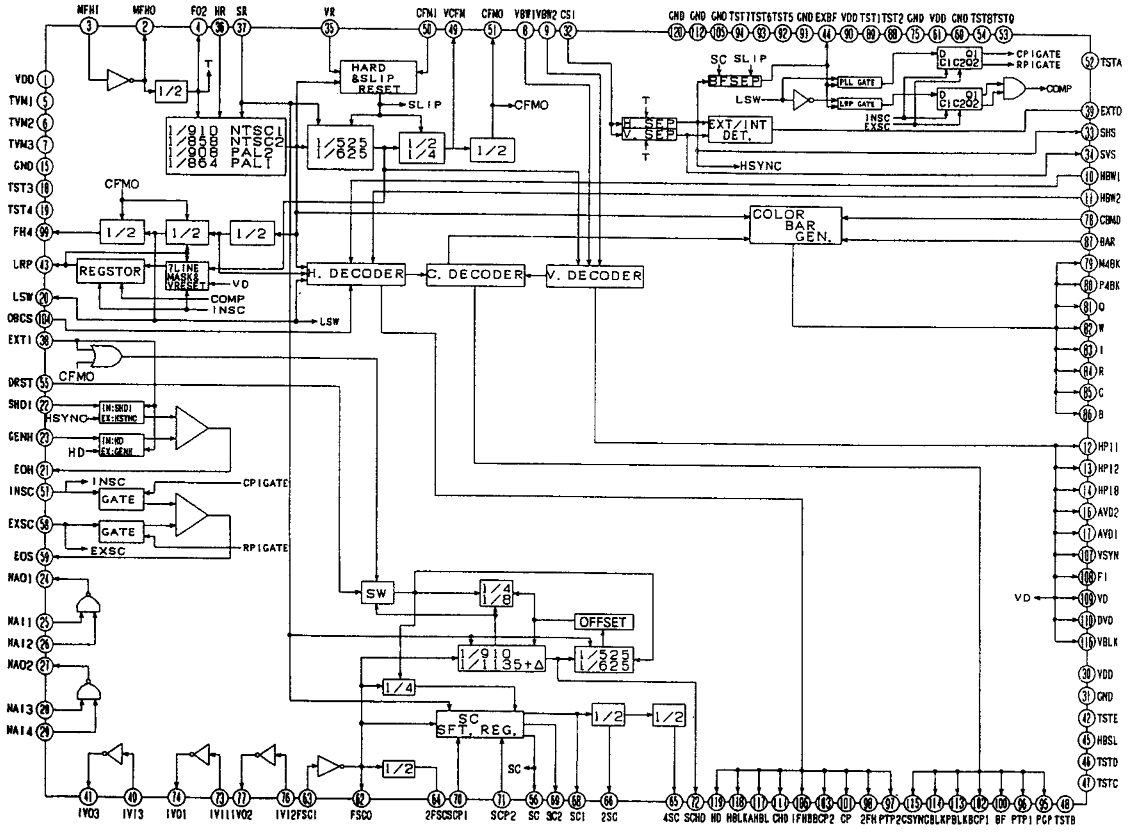
- **Pin function of JCS0005**

All input terminals are internally pulled up.

Pin No.	Symbol	I/O	Function
1	$\overline{\text{CS}}$	I	Chip select terminal of serial input/output.
3	SCK	I	Write-in clock for serial input/output. Data is read at rise of SCK.
5	DATA	I	Serial data input. To start with LSB.
6	VSS	—	GND (power)
7	OSC MODE	I	H : To use internal oscillator. L : To use external clock.
8	PHC1	O	Phase comparison output of internal PLL. Output level is low when clock is ahead of HD in the phase while it is high when clock is behind HD in the phase. In other period clock has high impedance.
9	$\overline{\text{PHC2}}$	O	Phase comparison output of internal PLL. Output level is high when clock is ahead of HD in the phase while it is low when clock is behind HD in the phase. In other period clock has high impedance.
11	XI	O	Oscillator input. When external clock is used, it is input to this terminal. External clock must be synchronous with HD. A feedback resistor is built in between XI and XO.
12	XO	O	Oscillator output.
14	$\overline{\text{O6}}$	O	General output 6
16	$\overline{\text{VD}}$	I	Vertical sync. signal input (negative)
17	$\overline{\text{HD}}$	I	Horizontal sync. signal input (negative)
18	VSS	—	GND (power)
19	VDD	—	+5 V power supply
20	$\overline{\text{RESET}}$	I	Reset input. Low level input (for more than 1 μsec at least) at power on inhibits output of AGDL, AGDH, SZONE, INCLINE and turns levels of general outputs $\overline{\text{O0}}$ to $\overline{\text{O6}}$ to low.
21	$\overline{\text{TEST}}$	I	To be used for IC inspection. For use, turn to open or connect with VDD.
22	SZONE	O	Safety zone indication output
23	INCLINE	O	Inclination angle indication output
24	$\overline{\text{CNBL}}$	O	Blanking output for cinema mode
25	AGDL	O	To output area gate in combination 2 bits of AGDL and AGDH. Output can be turned on/off by setting of internal register.
27	AGDH	O	AGDL AGDH Area gate 0 period (blanking period) 0 0 Area gate 1 period 0 1 Area gate 2 period 1 0 Area gate 3 period 1 1
30	$\overline{\text{O0}}$	O	General output 0
31	VSS	—	GND
33	$\overline{\text{O1}}$	O	General output 1
35	$\overline{\text{O2}}$	O	General output 2
37	$\overline{\text{O3}}$	O	General output 3
39	$\overline{\text{O4}}$	O	General output 4
42	VSS	—	GND (power)
43	VDD	—	+5 V power supply
44	$\overline{\text{O5}}$	O	General output 5
45	AG4	O	H output in area gate 4 period, L output in other period. Blanking is applied by internal BL signal.
46	AGL	O	To output area gate in combination of 2 bits of AGL and AGH.
47	AGH	O	AGDL AGDH Area gate 0 period (blanking period) 0 0 Area gate 1 period 0 1 Area gate 2 period 1 0 Area gate 3 period 1 1
48	BL	O	H output in blanking period, L output in other period.


1 VDD
2 MFHO
3 MFHI
4 FO2
5 TVM1
6 TVM2
7 TVM3
8 VBW1
9 VBW2
10 HBW1
11 HBW2
12 HP11
13 HP12
14 HP18
15 GND
16 AVD2
17 AVD1
18 TST3
19 TST4
20 LSW
21 EOH
22 SHDI
23 GENH
24 NAO1
25 NAI1
26 NAI2
27 NAO2
28 NAI3
29 NAI4
30 VDD
31 GND
32 CSI
33 SHS
34 SVS
35 VR
36 HR
37 SR
38 EXTI
39 EXTO
40 IVI3
41 IVO3
42 TSTE
43 LR
44 EXBF
45 HBSL
46 TSTD
47 TSTC
48 TSTB
49 VCFM
50 CFMI
51 CFMO
52 TSTA
53 TST9
54 TST8
55 DRST
56 SC
57 INSC
58 EXSC
59 EOS
60 GND
61 VDD
62 FSCO
63 FSCI
64 2FSC
65 4SC
66 2SC
67 GND
68 SC1
69 SC2
70 SCP1
71 SCP2
72 SCHD
73 IVI1
74 IVO1
75 GND
76 IVI2
77 IVO2
78 CBMD
79 M4BK
80 P4BK
81 Q
82 W
83 I
84 R
85 G
86 B
87 BAR
88 TST2
89 TST1
90 VDD
91 GND
92 TST5
93 TST6
94 TST7
95 PGP
96 PTP1
97 PTP2
98 2FH
99 FH4
100 BF
101 CP
102 BCP1
103 BCP2
104 OBCS
105 GND
106 IFHB
107 VSYN
108 FI
109 VD
110 DVD
111 CHD
112 GND
113 PBLK
114 CBLK
115 CSYN
116 VBLK
117 AHBL
118 HBLK
119 HD
120 GND

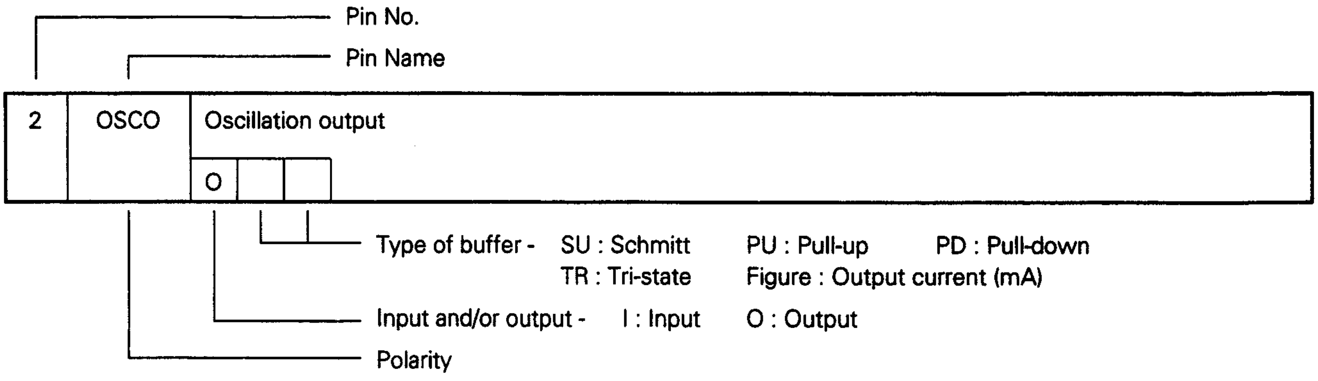
(TOP VIEW)

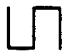
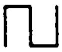
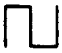

MFHI
MFHO
FO2
HR
SR
VR
CFMI
VCFM
CFMO
VBW1
VBW2
CSI
1/2
T
HARD &SLIP RESET
SLIP
CFMO
1/910 NTSC1
1/858 NTSC2
1/908 PAL2
1/864 PAL1
1/525
1/625
1/2
1/4
1/2
H. SEP
V. SEP
EXT/INT DET.
HSYNC
SC SLIP
BFSEP
LSW
PLL GATE
LRP GATE
INSC
EXSC
CPIGATE
RPIGATE
COMP
COLOR BAR GEN.
CFMO
1/2
1/2
1/2
REGSTOR
7LINE MASK& VRESET
VD
COMP
INSC
H. DECODER
C. DECODER
V. DECODER
LSW
CFMO
HSYNC
IN:SHDI EX:HSYNC
HD
IN:HD EX:GENH
INSC
GATE
CPIGATE
GATE
EXSC
RPIGATE
SW
1/4
1/8
OFFSET
1/910
1/1135+Δ
1/525
1/625
1/4
SC SFT. REG.
1/2
1/2
SC
1/2
VD
VDD
TVM1
TVM2
TVM3
GND
TST3
TST4
FH4
LRP
LSW
OBCS
EXTI
DRST
SHDI
GENH
EOH
INSC
EXSC
EOS
NAO1
NAI1
NAI2
NAO2
NAI3
NAI4
IVO3
IVI3
IVO1
IVI1
IVO2
IVI2
FSCI
FSCO
2FSC
SCP1
SCP2
SC
SC2
SC1
2SC
4SC
SCHD
HD
HBLK
AHBL
CHD
IFHB
BCP2
CP
2FH
PTP2
CSYN
CBLK
PBLK
BCP1
BF
PTP1
PGP
TST8
TSTA
EXTO
SHS
SVS
HBW1
HBW2
CBMD
BAR
M4BK
P4BK
Q
W
I
R
G
B
HP11
HP12
HP18
AVD2
AVD1
VSYN
FI
VD
DVD
VBLK
VDD
GND
TSTE
HBSL
TSTD
TSTC
GND
GND
GND
TST7
TST6
TST5
GND
EXBF
VDD
TST1
TST2
GND
VDD
GND
TST8
TST9

(BLOCK DIAGRAM)

- **Pin function (JCS0018)**

[Explanation of column]


Pin No.
Pin Name
2
OSCO
Oscillation output
O
Type of buffer - SU : Schmitt PU : Pull-up PD : Pull-down
TR : Tri-state Figure : Output current (mA)
Input and/or output - I : Input O : Output
Polarity

No.	Symbol	Description
1	VDD	+5 V power supply
2	MFHO 	Sync. pulse oscillation output • Built-in oscillator output terminal O
3	MFHI 	Sync. pulse oscillation input • Built-in oscillator input terminal I
4	FO2 	1/2 divided output • 1/2 divided output of sync. pulse oscillator O 9
5	TVM1 —	TV mode 1 I PU
6	TVM2 —	TV mode 2 I PU
7	TVM3 —	TV mode 3 I PU
8	VBW1 —	V. blanking control 1 I PU
9	VBW2 —	V. blanking control 2 I PU
10	HBW1 —	H. blanking control 1 I PU
11	HBW2 —	H. blanking control 2 I PU

	NTSC 1 1820 FH	NTSC 2 1716 FH	PAL 2 1816 FH	PAL 1 1728 FH	PAL M 1716 FH	SECAM 1716 FH
TVM1	L	H	L	H	L	H
TVM2	L	L	H	H	L	L
TVM3	L	L	L	L	H	H

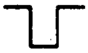
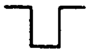
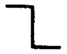
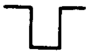
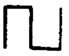
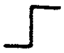
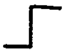
VBW 1	L	H	L	H
VBW 2	L	L	H	H
NTSC 1	21H	20H	19H	18H
NTSC2	21H	20H	19H	18H
PAL 1	26H	25H	24H	23H
PAL 2	26H	25H	24H	23H
PAL M	21H	20H	19H	18H
SECAM	26H	25H	24H	23H

HBW 1	L	H	L	H
HBW 2	L	L	H	H
NTSC 1	157T	156T	154T	152T
NTSC2	148T	147T	146T	152T
PAL 1	162T	159T	156T	153T
PAL 2	170T	167T	164T	161T
PAL M	148T	147T	146T	144T
SECAM	162T	159T	156T	153T

JCS0018

No.	Symbol	Description
12	HP11 ‾|_|‾	H. pulse 11 O 9 • Active at 11H, 13H, 15H and 17H
13	HP12 ‾|_|‾	H. pulse 12 O 9 • Active at 12H and 14H
14	HP18 ‾|_|‾	H. pulse 18 O 9 • Active at 18H
15	GND	Grounding
16	AVD2 ‾|_|‾	Pre-vertical drive 2 O 9 • V. drive pulse whose phase is 8H ahead of VD. • Functions as subcarrier blanking pulse in SECAM system.
17	AVD1 ‾|_|‾	Pre-vertical drive 1 O 9 • V. drive pulse whose phase is 1H ahead of VD
18	TST3 —	Test pin 3 I PU • Should be open in general.
19	TST4 —	Test pin 4 I PU • Should be open in general.
20	LSW |‾|_|	Line switch O 9 • Half divided output of FH. • Switches color difference signal of adjacent lines at angle of 180° in PAL. system.
21	EOH —	H. sync digital phase comparison output O TR 13 • When internal HD is ahead of leading edge of SHDI in phase : Low level • When internal HD is behind of leading edge of SHDI in phase: High level • When internal HD accords with leading edge of SHDI in phase: High impedance
22	SHDI ‾|_	H. sync digital phase comparison input (Trailing detection) I SH PU • To input H. driving pulse originating from subcarrier. • EXTI is effective at Low level, otherwise SHS (No. 33) is internally connected.
23	GENH ‾|_	H. sync digital phase comparison input (Trailing detection) I SH PU • Input for external sync, H. sync and phase adjustment. • EXTI is effective at High level, otherwise HD (No. 119) is internally connected.
24	NAO1 —	NAND output 1 O 9 • To output NAI1 (No. 25) and NAI2 (No. 26) signals.
25	NAI1 —	NAND input 1 I • When this is not in use, fix the level.
26	NAI2 —	NAND input 2 I • When this is not in use, fix the level.
27	NAO2 —	NAND output 2 O 9 • To output NAI3 (No. 28) and NAI4 (No. 29) signals.

No.	Symbol	Description
28	NAI3 —	NAND input 3 I • When this is not in use, fix the level.
29	NAI4 —	NAND input 4 I • When this is not in use, fix the level.
30	VDD	+5 V power supply
31	GND	Grounding
32	CSI ⊔	External composite sync signal input I SH PU • To input external composite sync signal for H. separation, V. separation and detection of external signal input.
33	SHS ⊔	H-separated sync signal O 9 • To output signal that is horizontally separated from external composit e sync signal. • 1/2 equalizing pulse is not contained.
34	SVS ⊔	V-separated sync signal O 9 • To output signal that is vertically separated from external composit e sync signal. • 1/2 equalizing pulse is not contained.
35	VR ⊔	V. reset I PU • External sync input by the slip system. • When it is input in V. sync period, it is hard reset. Input in the other period stops the internal counter for a period corresponding to the pulse width.
36	HR ⌊	H. reset I PU • Presets horizontal component 1T before the rise of HD with absorption of jitter within 140 ns. However, operation is not secured against continuous input.
37	SR ⌊	System reset I PU • Forcibly initializes inside of IC regardless of internal and external synchronization. • VR and HR inputs are invalid, and jitters within 140 ns are absorbed.
38	EXTI —	Internal and external sync setting input I PD • L : Internal sync setting • H : External sync setting
39	EXTO —	Internal and external sync setting output O 9 • L : CSI input absent - After absence of SVS is detected, no SHS is detected for 8 fields. • H : CSI input present- SVS is detected and 200 or more SHS's are detected in a vertical period.
40	IVI3 —	Inverter input 3 I • When this is not in use, fix the level.
41	IVO3 —	Inverter output 3 O 9 • Inversion output of IVI3 (No. 40)
42	TSTE —	Test pin E I PU • Should be open in general.
43	LR ⊔	Line reset O 9 • When EXTI is in ext. sync (High level), setting signal is supplied to LSW. • From phase comparison between external burst and internal burst: Internal burst is delayed : Low level output (for SC6 clocks) Internal burst is advanced or the same : High level output • Phase comparison is not performed for 7H after output.

No.	Symbol	Description
44	EXBF 	Burst flag separation output O 9 • With detection of 1 or more H. sync pulse from CSI input, this outputs a pulse whose pulse width is equivalent to 8 cycles of subcarrier.
45	HBSL —	H. blanking select I PU • IFHB (No. 106) output point switching terminal • L : System delay by 900 ns approx. H : System delay by 450 ns approx.
46	TSTD —	Test pin D O 9 • Should be open in general.
47	TSTC —	Test pin C O 9 • Should be open in general.
48	TSTB —	Test pin B I PU • Should be open in general.
49	VCFM 	VTR color frame O 9 • Color frame for exclusive use of VTR For NTSC 1, NTSC 2, PAL M : 2-field period For PAL 1, PAL 2, SECAM : 4-field period
50	CFMI 	Color frame input I SH PU • Active with EXTI at High level. • Used for color frame control in external sync. • Resets synchronous circuits by the slip system.
51	CFMO 	Color frame output O 9 • Pulse output at the beginning of each color frame. For NTSC 1, NTSC 2 : 4-field period For PAL 1, PAL 2, PAL M, SECAM : 8-field period
52	TSTA —	Test pin A I PU • Should be open in general.
53	TST9 —	Test pin 9 I PU • Should be open in general.
54	TST8 —	Test pin 8 I PU • Should be open in general.
55	DRST —	Direct reset I PU • To switch reset operation of horizontal counter for subcarrier as EXTI is at Low level. High level : Resetting horizontal counter synchronizing with color frame input. Low level : Resetting with color frame input only.
56	SC 	Subcarrier output O 9 • To monitor subcarrier signal connected internally with digital phase comparator. Same phase as that of SC1 (No. 68) when its phase is 0°.
57	INSC 	Internal subcarrier input I • Connected with SC (No. 56). • Active with EXBF at Low level. Rise-up is detected.
58	EXSC 	External subcarrier input I • Active with EXBF at Low level. Rise-up is detected.

No.	Symbol	Description
59	EOS —	Digital phase comparison output for subcarrier O TR 13 • When internal SC is ahead of leading edge of EXSC in phase : Low level • When internal SC is behind of leading edge of EXSC in phase : High level • When internal SC accords with leading edge of EXSC in phase : High impedance
60	GND	Grounding
61	VDD	+5 V power supply
62	FSCO ⊔⊓	Oscillator output for subcarrier O
63	FSCI ⊓⊔	Oscillator input for subcarrier I
64	2FSC ⊓⊔	Twofold subcarrier output O 13 • Half divided output of oscillator for subcarrier
65	4SC ⊓⊔	1/4 subcarrier output O 9 • Output having a quarter frequency of subcarrier
66	2SC ⊓⊔	1/2 subcarrier output O 9 • Output having a half frequency of subcarrier
67	GND	Grounding
68	SC1 ⊓⊔	Subcarrier 1 O 9 • Subcarrier frequency output. • Phase is switched by SCP1 and SCP2. • Not inverted every 1H in PAL.
69	SC2 ⊓⊔	Subcarrier 2 O 9 • Subcarrier frequency output whose phase is ahead of SC1 at angle of 90°. • Phase is switched by SCP1 and SCP2. • Inverted exactly (180°) every 1H in PAL.
70	SCP1 —	Subcarrier select 1 I PD
71	SCP2 —	Subcarrier select 2 I PD

SCP2	SCP1	SC1	SC2
L	L	0°	90° ahead (270°)
L	H	90°	90° ahead (0°)
H	L	180°	90° ahead (90°)
H	H	270°	90° ahead (180°)

Expressions of SC2 are relative values to SC1.

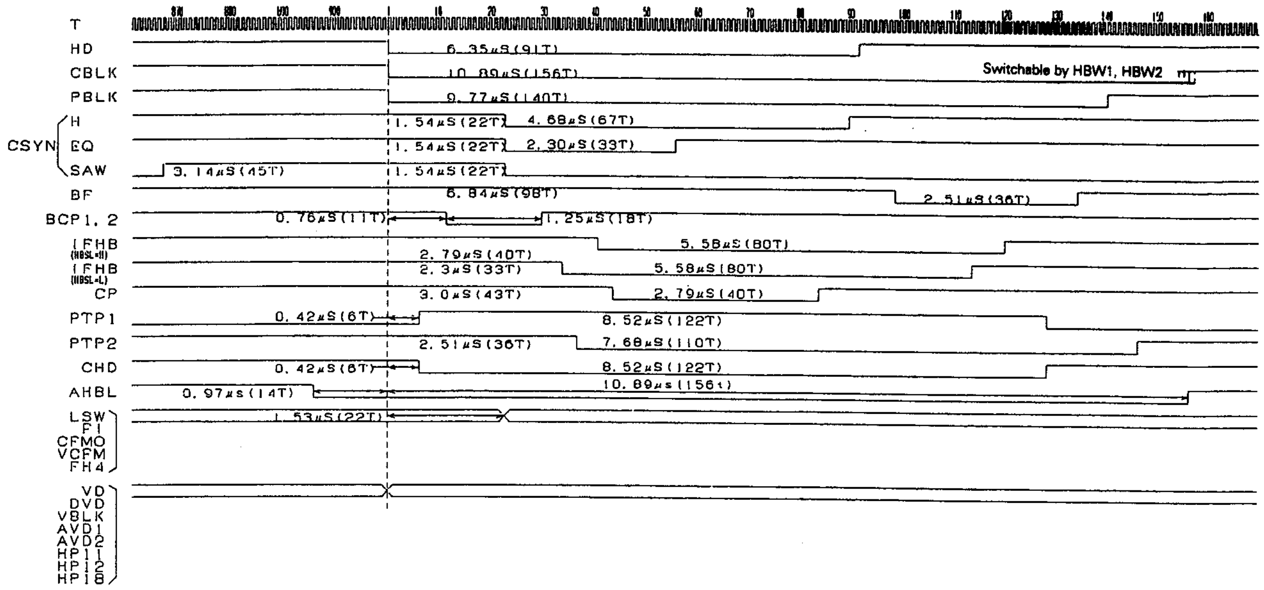
No.	Symbol	Description
72	SCHD ‾⊔‾	Subcarrier H. driver O 13 • Horizontal driver originating from subcarrier frequency.
73	IVI1 —	Inverter input 1 I • When this is not in use, fix the level.
74	IVO1 —	Inverter output 1 O 9 • Inversion output of IVI1 (No. 73)
75	GND	Grounding
76	IVI2 —	Inverter input 2 I • When this is not in use, fix the level.

<table>
<tr><th>No.</th><th>Symbol</th><th colspan="2">Description</th></tr>
<tr><td>77</td><td>IVO2
—</td><td>Inverter output 2
O 9</td><td>• Inversion output of IVI2 (No. 76)</td></tr>
<tr><td>78</td><td>CBMD
—</td><td>SMPTE/FULL
I PU</td><td>• To switch color bars signal between SMPTE and FULL modes.
L : FULL FIELD mode Color bars signal is effective only at Low level.
H : SMPTE mode</td></tr>
<tr><td>79</td><td>M4BK
⎍</td><td>Color bar signal
O 9</td><td rowspan="5">
<table>
<tr><th></th><th>BAR</th><th>CBMD</th><th>I</th><th>W</th><th>Q</th><th>P4BK</th><th>M4BK</th></tr>
<tr><td>NTSC 1
NTSC 2</td><td>H
L
L</td><td>X
H
L</td><td>L
O
L</td><td>L
O (75%W)
L</td><td>L
O
L</td><td>L
O
L</td><td>L
O
L</td></tr>
<tr><td>PAL 1
PAL 2</td><td>H
L
L</td><td>X
H
L</td><td>L
O
L</td><td>L
O (75%W)
O (100%W)</td><td>L
O
L</td><td>L
O
L</td><td>L
O
L</td></tr>
<tr><td>PAL M</td><td>H
L
L</td><td>X
H
L</td><td>L
O
L</td><td>L
O (75%W)
O (100%W)</td><td>L
O
L</td><td>L
O
L</td><td>L
O
L</td></tr>
<tr><td>SECAM</td><td>H
L
L</td><td>X
H
L</td><td>L
O
L</td><td>L
O (75%W)
L</td><td>L
O
L</td><td>L
O
L</td><td>L
O
L</td></tr>
</table>
O = Present</td></tr>
<tr><td>80</td><td>P4BK
⎍</td><td>Color bar signal
O 9</td></tr>
<tr><td>81</td><td>Q
⎍</td><td>Color bar signal
O 9</td></tr>
<tr><td>82</td><td>W
⎍</td><td>Color bar signal
O 9</td></tr>
<tr><td>83</td><td>I
⎍</td><td>Color bar signal
O 9</td></tr>
<tr><td>84</td><td>R
⎍</td><td>Color bar signal
O 9</td><td rowspan="3">
<table>
<tr><th></th><th>BAR</th><th>CBMD</th><th>B</th><th>G</th><th>R</th></tr>
<tr><td>NTSC 1
NTSC 2</td><td>H
L</td><td>X
X</td><td>L
Effective</td><td>L
Effective</td><td>L
Effective</td></tr>
<tr><td>PAL 1
PAL 2</td><td>H
L</td><td>X
X</td><td>L
Effective</td><td>L
Effective</td><td>L
Effective</td></tr>
<tr><td>PAL M</td><td>H
L</td><td>X
X</td><td>L
Effective</td><td>L
Effective</td><td>Effective</td></tr>
<tr><td>SECAM</td><td>H
L</td><td>X
X</td><td>L
Effective</td><td>L
Effective</td><td>L
Effective</td></tr>
</table></td></tr>
<tr><td>85</td><td>G
⎍</td><td>Color bar signal
O 9</td></tr>
<tr><td>86</td><td>B
⎍</td><td>Color bar signal
O 9</td></tr>
<tr><td>87</td><td>BAR
—</td><td>Color bars control (ON/OFF)
I PU</td><td>
<table>
<tr><th>BAR</th><th>R, G, B, I, Q, W, P4BK, M4BK</th></tr>
<tr><td>L</td><td>Active</td></tr>
<tr><td>H</td><td>Fixed at Low level.</td></tr>
</table></td></tr>
<tr><td>88</td><td>TST2
—</td><td>Test pin 2
I PU</td><td>• Should be open in general.</td></tr>
<tr><td>89</td><td>TST1
—</td><td>Test pin 1
I PU</td><td>• Should be open in general.</td></tr>
<tr><td>90</td><td>VDD</td><td colspan="2">+5 V power supply</td></tr>
<tr><td>91</td><td>GND</td><td colspan="2">Grounding</td></tr>
<tr><td>92</td><td>TST5
—</td><td>Test pin 5
I PU</td><td>• Should be open in general.</td></tr>
</table>

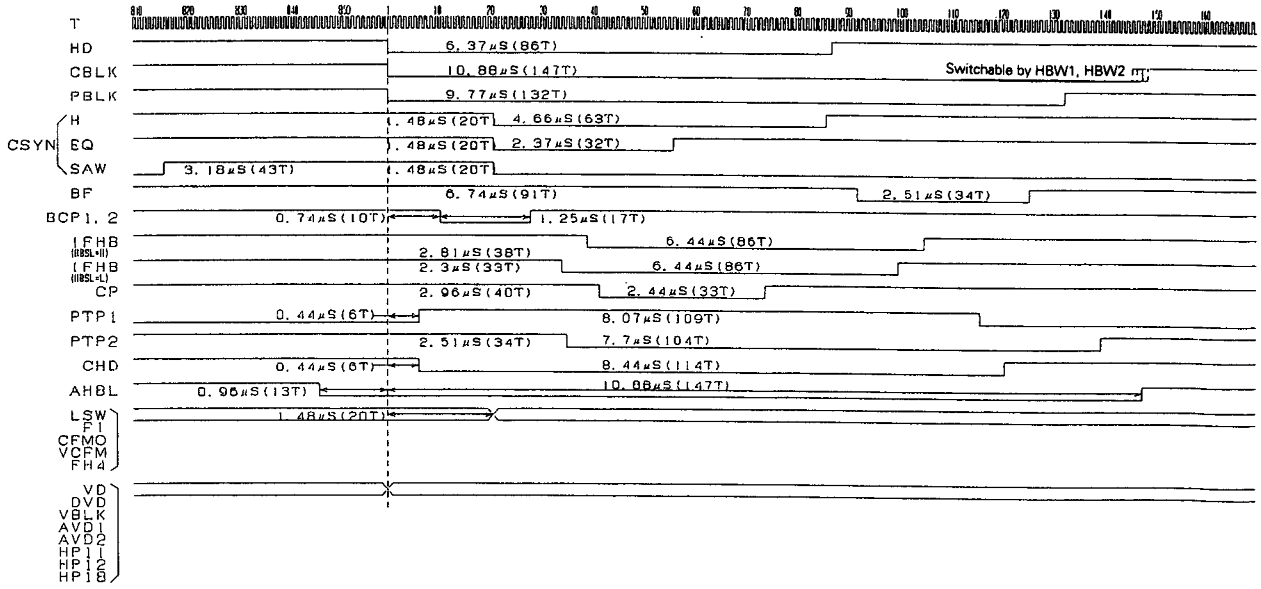
No.	Symbol	Description				
93	TST6 —	Test pin 6	I	PU		• Should be open in general.
94	TST7 —	Test pin 7	O	9		• Should be open in general.
95	PGP ‾⊔‾	Pilot gate pulse	O	9		• Equalizes voltages levels of two signals, one passed 1H delay line and the other did not pass it, to compensate attenuation by the delay line.
96	PTP1 ‾⊔‾	Pilot pulse 1	O	9		• Equalizes voltages levels of two signals, one passed 1H delay line and the other did not pass it, to compensate attenuation by the delay line.
97	PTP2 ‾⊔‾	Pilot pulse 2	O	9		• Used to control video level.
98	2FH ⊓⊔	Twofold FH	O	9		
99	FH4 ⊓⊔	1/4FH	O	9		• Half divided output of LSW. • Equivalent to 25 Hz offset signal in PAL.
100	BF ‾⊔‾	Burst flag	O	9		• Specifies period to insert subcarrier into the back porch of H. sync signal. • Switches chromaticity signal every line in SECAM.
101	CP ‾⊔‾	Clamp pulse	O	9		• To clamp reference voltage of black level.
102	BCP1 ‾⊔‾	Black clamp pulse 1	O	9		• To fix black level of CCD output signal.
103	BCP2 ‾⊔‾	Black clamp pulse 2	O	9		• To fix black level of CCD output signal (output at every H).
104	OBCS —	Optical black pulse select	I	PU		• Switches horizontal output position of BCP1 and BCP2. L : Front output, H : Rear output
105	GND	Grounding				
106	IFHB ‾⊔‾	Interface H. blanking	O	9		• Pulse output whose leading and trailing edges are narrower than those of HBLK.
107	VSYN ‾⊔‾	V. sync output	O	9		• V. sync signal whose pulse width is equivalent to V. EQ pulse width.
108	FI —	Field index	O	9		• Field discrimination signal L : Field which HD and VD pulses accord with each other in the fall. H : Field having a time lag of 0.5H between the falls of HD and VD.
109	VD ‾⊔‾	V. drive	O	9		• Pulse output at the beginning of every field. • Reference signal of vertical timing of inside operation of the set.

No.	Symbol	Description
110	DVD ⊔	Delayed V. drive O 9 • V. drive pulse that lags VD in time controls scanning timing of camera by regulating start time of sawtooth waveform of the vertical deflection circuit.
111	CHD ⊔	Delayed H. drive O 9 • Controls scanning timing of camera. • Regulates start time of sawtooth waveform of the vertical deflection circuit.
112	GND	Grounding
113	PBLK ⊔	Pre-blanking O 9 • Composite blanking signal to be used in the stage of video processing. • Leading edge is narrower than that of CBLK.
114	CBLK ⊔	Composite blanking O 9 • Horizontal and vertical composite blanking signal
115	CSYN ⊔	Composite sync O 9 • Composite sync signal composed of HSYN, VSYN, EQ and SAW signals.
116	VBLK ⊔	V. blanking O 9 • Vertical blanking signal whose pulse width is switchable by VBW1 and VBW2.
117	AHBL ⊔	Prepositional H. blanking O 9 • Prepositional horizontal blanking pulse whose leading edge is in advance of HBLK.
118	HBLK ⊔	H. blanking O 9 • Horizontal blanking pulse whose pulse width is switchable by HBW1 and HBW2.
119	HD ⊔	H. drive O 13 • Pulse synchronizing with the beginning of every line. • Reference horizontal timing of inside operations of the set.
120	GND	Grounding

[NTSC 1] H-TIMING

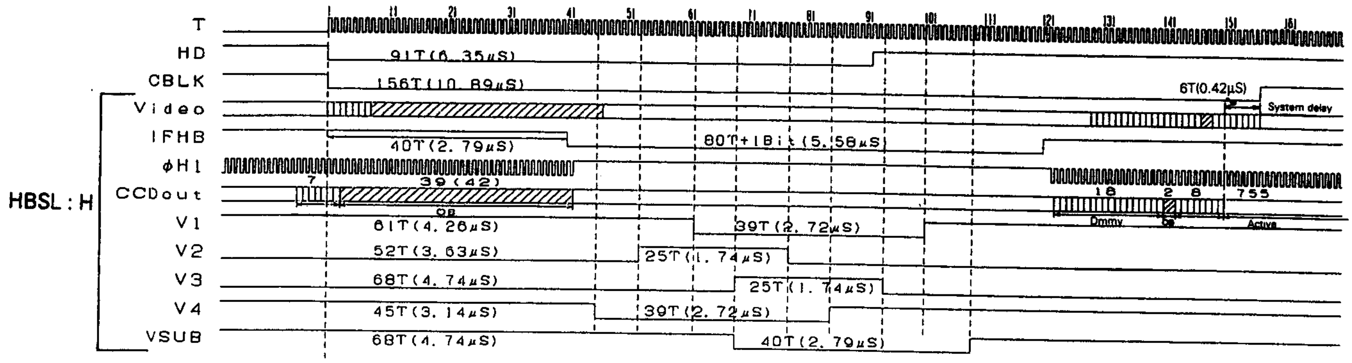

T
HD
CBLK
PBLK
CSYN
H
EQ
SAW
BF
BCP1, 2
IFHB (HBSL=H)
IFHB (HBSL=L)
CP
PTP1
PTP2
CHD
AHBL
LSW
FI
CFMO
VCFM
FH4
VD
DVD
VBLK
AVD1
AVD2
HP11
HP12
HP18
6. 35μS(91T)
10. 89μS(156T)
Switchable by HBW1, HBW2
9. 77μS(140T)
1. 54μS(22T)
4. 68μS(67T)
1. 54μS(22T)
2. 30μS(33T)
3. 14μS(45T)
1. 54μS(22T)
6. 84μS(98T)
2. 51μS(36T)
0. 76μS(11T)
1. 25μS(18T)
2. 79μS(40T)
5. 58μS(80T)
2. 3μS(33T)
5. 58μS(80T)
3. 0μS(43T)
2. 79μS(40T)
0. 42μS(6T)
8. 52μS(122T)
2. 51μS(36T)
7. 68μS(110T)
0. 42μS(6T)
8. 52μS(122T)
0. 97μs(14T)
10. 89μs(156t)
1. 53μS(22T)

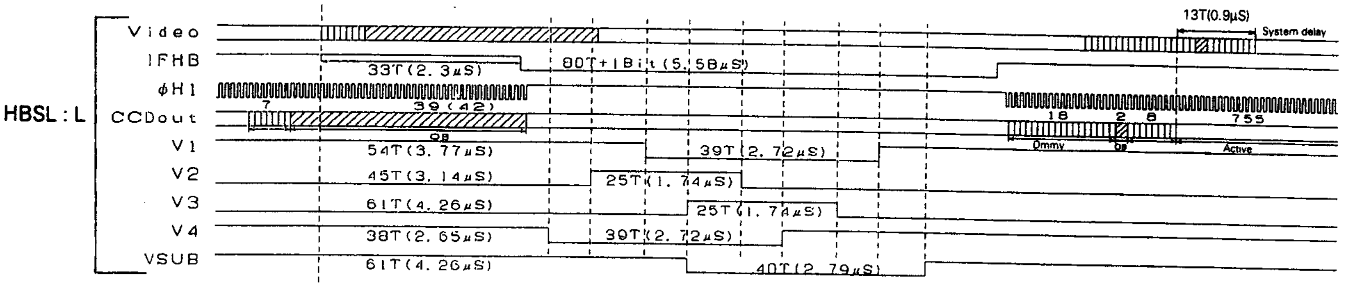
[NTSC 2] H-TIMING


T
HD
CBLK
PBLK
CSYN
H
EQ
SAW
BF
BCP1, 2
IFHB (HBSL=H)
IFHB (HBSL=L)
CP
PTP1
PTP2
CHD
AHBL
LSW
FI
CFMO
VCFM
FH4
VD
DVD
VBLK
AVD1
AVD2
HP11
HP12
HP18
6. 37μS(86T)
10. 88μS(147T)
Switchable by HBW1, HBW2
9. 77μS(132T)
1. 48μS(20T)
4. 66μS(63T)
1. 48μS(20T)
2. 37μS(32T)
3. 18μS(43T)
1. 48μS(20T)
6. 74μS(91T)
2. 51μS(34T)
0. 74μS(10T)
1. 25μS(17T)
2. 81μS(38T)
6. 44μS(86T)
2. 3μS(33T)
6. 44μS(86T)
2. 96μS(40T)
2. 44μS(33T)
0. 44μS(6T)
8. 07μS(109T)
2. 51μS(34T)
7. 7μS(104T)
0. 44μS(6T)
8. 44μS(114T)
0. 96μS(13T)
10. 88μS(147T)
1. 48μS(20T)

[NTSC 1] H-TIMING

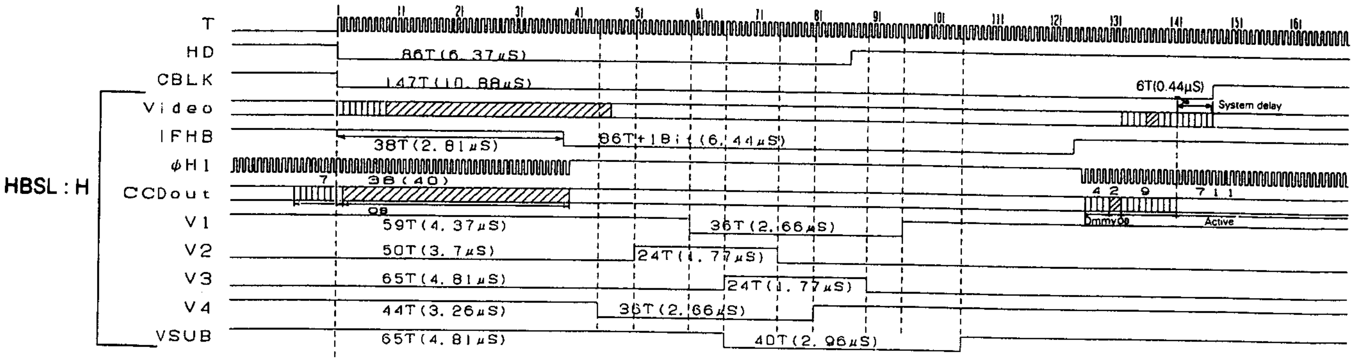
1H=910T=910Bit
1T=1Bit=69.84127871nS

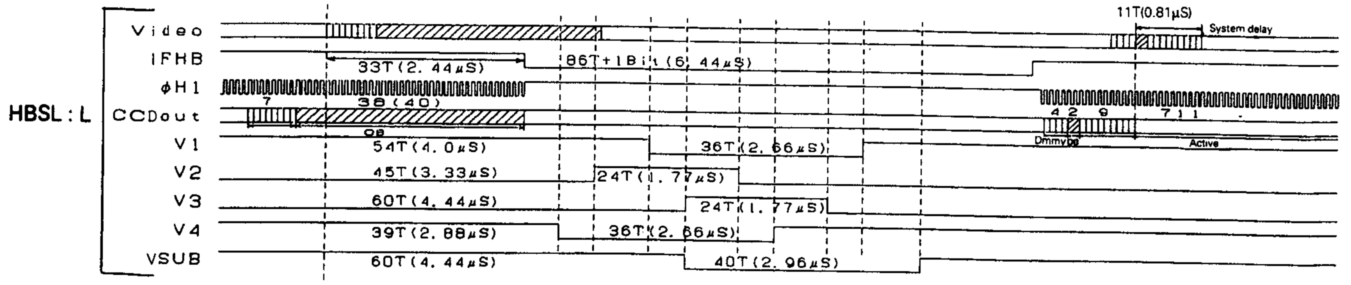

T
HD
CBLK
Video
IFHB
ϕH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : H
91T(6.35μS)
156T(10.89μS)
6T(0.42μS)
System delay
40T(2.79μS)
80T+1Bit(5.58μS)
7
39(42)
OB
18
2
8
755
Dmmy
Active
61T(4.26μS)
39T(2.72μS)
52T(3.63μS)
25T(1.74μS)
68T(4.74μS)
25T(1.74μS)
45T(3.14μS)
39T(2.72μS)
68T(4.74μS)
40T(2.79μS)


Video
IFHB
ϕH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : L
13T(0.9μS)
System delay
33T(2.3μS)
80T+1Bit(5.58μS)
7
39(42)
OB
18
2
8
755
Dmmy
Active
54T(3.77μS)
39T(2.72μS)
45T(3.14μS)
25T(1.74μS)
61T(4.26μS)
25T(1.74μS)
38T(2.65μS)
39T(2.72μS)
61T(4.26μS)
40T(2.79μS)

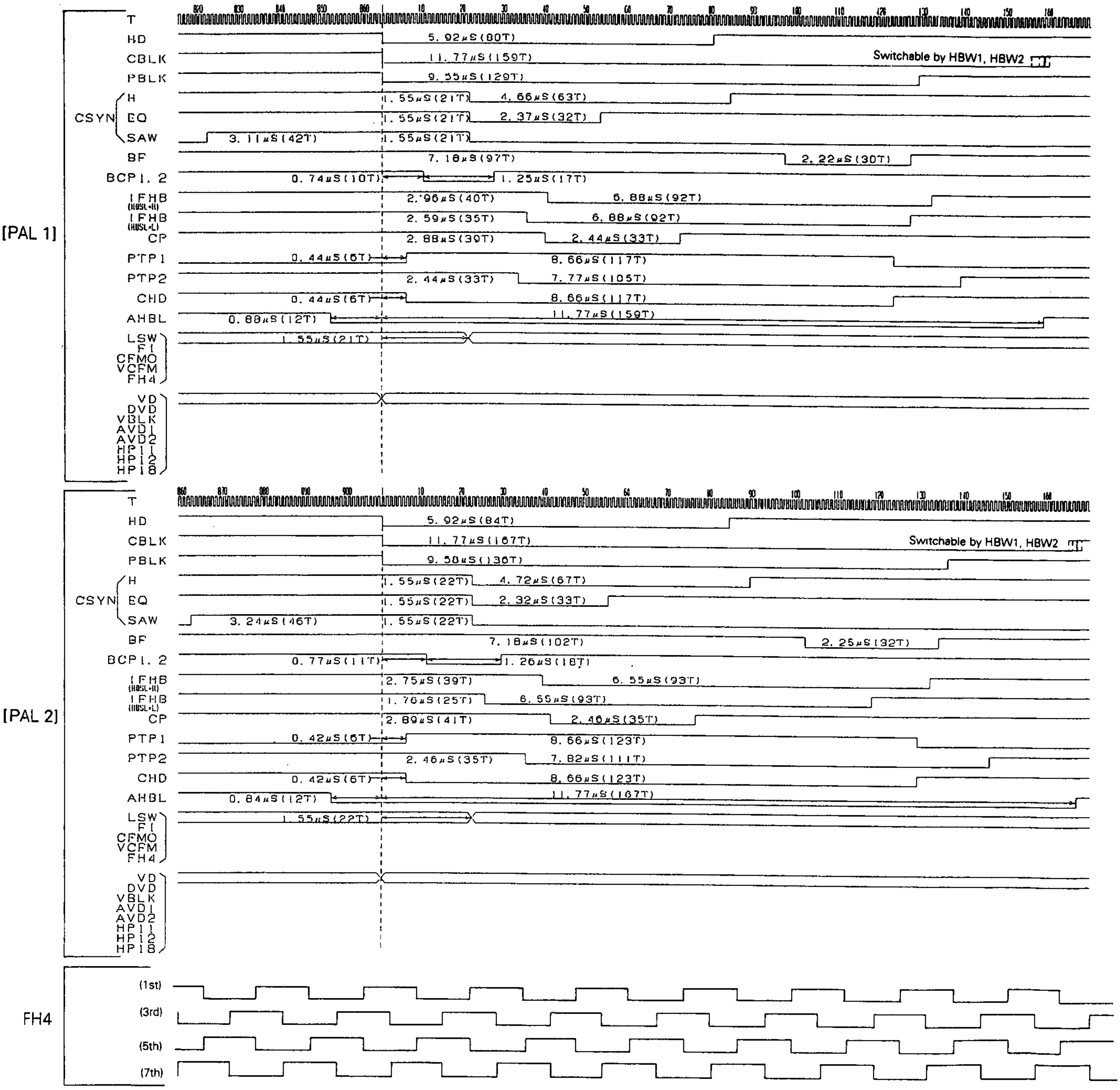
[NTSC 2] H-TIMING

1H=858T=858Bit
1T=1Bit=74.07408695μS

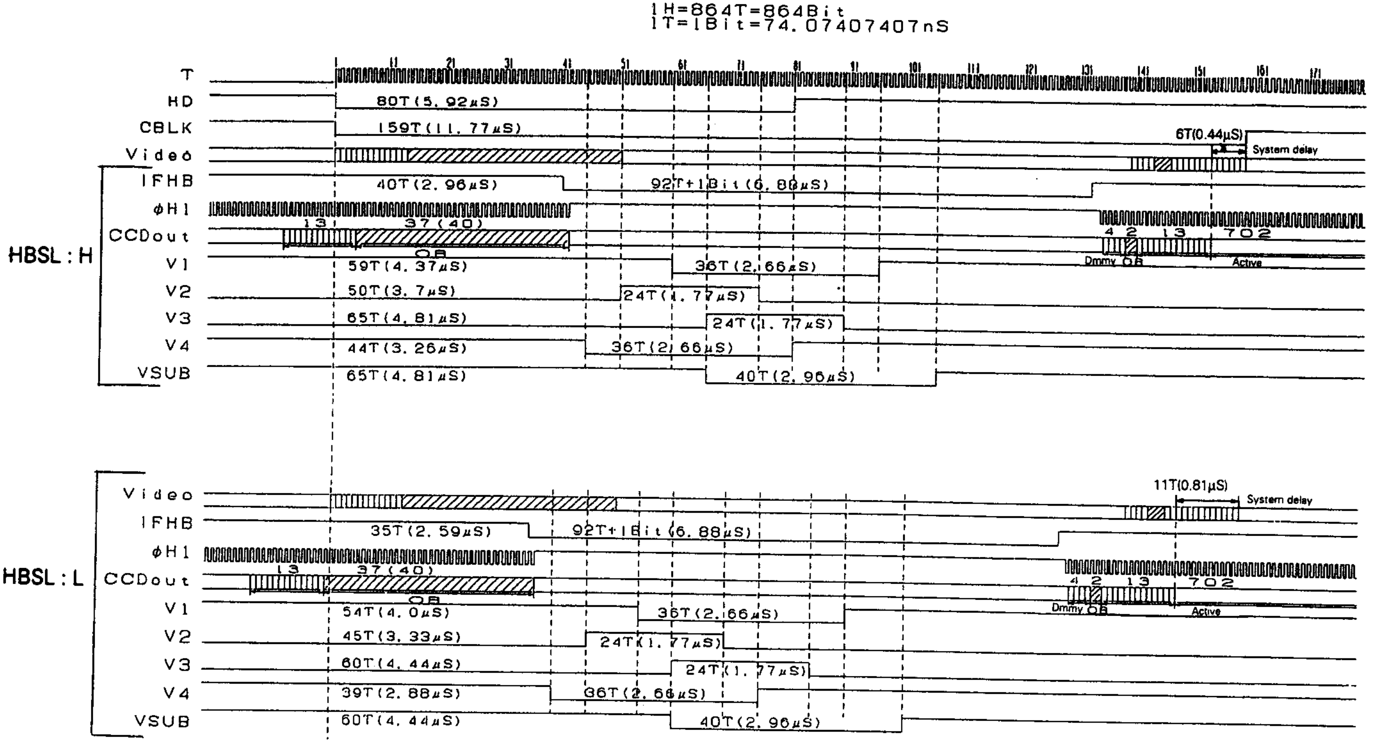

T
HD
CBLK
Video
IFHB
ϕH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : H
86T(6.37μS)
147T(10.88μS)
6T(0.44μS)
System delay
38T(2.81μS)
86T+1Bit(6.44μS)
7
38(40)
OB
4
2
9
711
Dmmy
OB
Active
59T(4.37μS)
36T(2.66μS)
50T(3.7μS)
24T(1.77μS)
65T(4.81μS)
24T(1.77μS)
44T(3.26μS)
36T(2.66μS)
65T(4.81μS)
40T(2.96μS)


Video
IFHB
ϕH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : L
11T(0.81μS)
System delay
33T(2.44μS)
86T+1Bit(6.44μS)
7
38(40)
OB
4
2
9
711
Dmmy
OB
Active
54T(4.0μS)
36T(2.66μS)
45T(3.33μS)
24T(1.77μS)
60T(4.44μS)
24T(1.77μS)
39T(2.88μS)
36T(2.66μS)
60T(4.44μS)
40T(2.96μS)

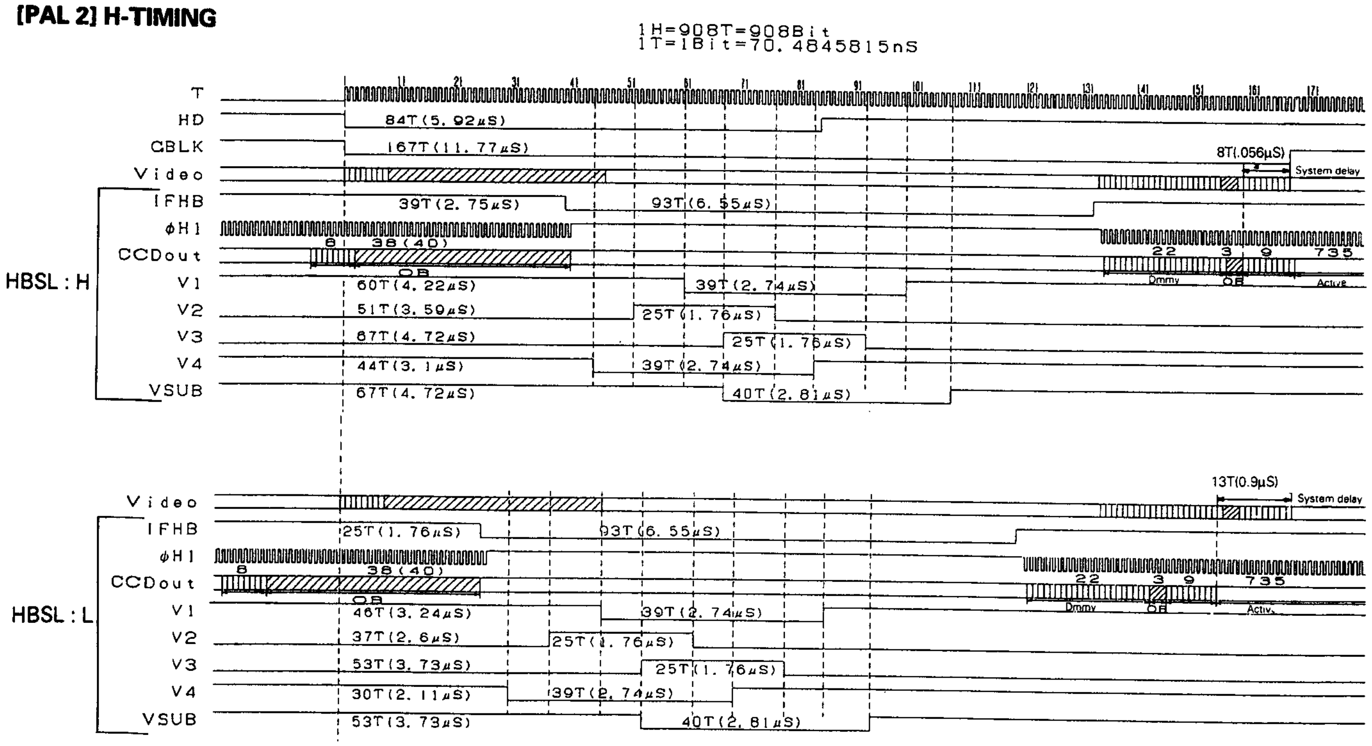
[PAL 1] H-TIMING


[PAL 1]
T
HD
CBLK
PBLK
CSYN
H
EQ
SAW
BF
BCP1, 2
IFHB (HOSL-H)
IFHB (HOSL-L)
CP
PTP1
PTP2
CHD
AHBL
LSW
FI
CFMO
VCFM
FH4
VD
DVD
VBLK
AVD1
AVD2
HP11
HP12
HP18
5. 92μS(80T)
11. 77μS(159T)
Switchable by HBW1, HBW2
9. 55μS(129T)
1. 55μS(21T)
4. 66μS(63T)
1. 55μS(21T)
2. 37μS(32T)
3. 11μS(42T)
1. 55μS(21T)
7. 18μS(97T)
2. 22μS(30T)
0. 74μS(10T)
1. 25μS(17T)
2. 96μS(40T)
6. 88μS(92T)
2. 59μS(35T)
6. 88μS(92T)
2. 88μS(39T)
2. 44μS(33T)
0. 44μS(6T)
8. 66μS(117T)
2. 44μS(33T)
7. 77μS(105T)
0. 44μS(6T)
8. 66μS(117T)
0. 88μS(12T)
11. 77μS(159T)
1. 55μS(21T)
[PAL 2]
T
HD
CBLK
PBLK
CSYN
H
EQ
SAW
BF
BCP1, 2
IFHB (HOSL-H)
IFHB (HOSL-L)
CP
PTP1
PTP2
CHD
AHBL
LSW
FI
CFMO
VCFM
FH4
VD
DVD
VBLK
AVD1
AVD2
HP11
HP12
HP18
5. 92μS(84T)
11. 77μS(167T)
Switchable by HBW1, HBW2
9. 58μS(136T)
1. 55μS(22T)
4. 72μS(67T)
1. 55μS(22T)
2. 32μS(33T)
3. 24μS(46T)
1. 55μS(22T)
7. 18μS(102T)
2. 25μS(32T)
0. 77μS(11T)
1. 26μS(18T)
2. 75μS(39T)
6. 55μS(93T)
1. 76μS(25T)
6. 55μS(93T)
2. 89μS(41T)
2. 46μS(35T)
0. 42μS(6T)
8. 66μS(123T)
2. 46μS(35T)
7. 82μS(111T)
0. 42μS(6T)
8. 66μS(123T)
0. 84μS(12T)
11. 77μS(167T)
1. 55μS(22T)
FH4
(1st)
(3rd)
(5th)
(7th)

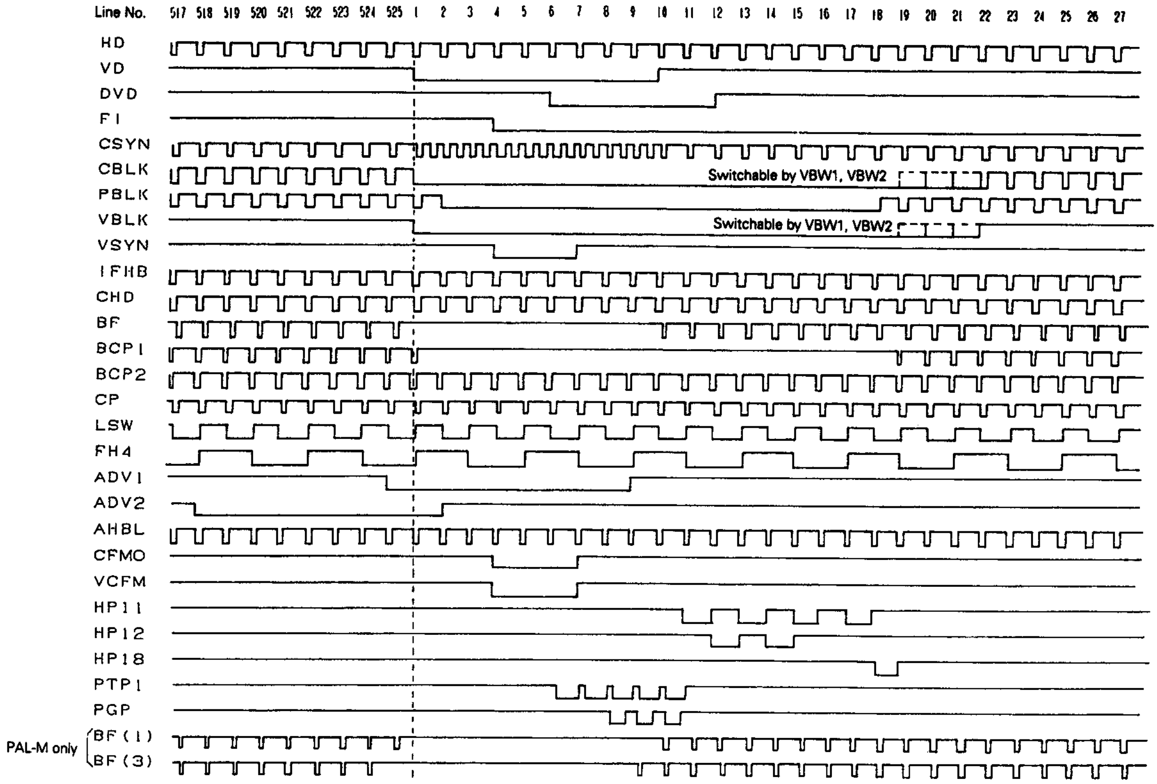
[PAL 1] H-TIMING


1H=864T=864Bit
1T=1Bit=74.07407407nS
T
HD
CBLK
Video
IFHB
φH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : H
80T(5.92μS)
159T(11.77μS)
6T(0.44μS)
System delay
40T(2.96μS)
92T+1Bit(6.88μS)
13
37(40)
OB
42
13
702
Dmmy
OB
Active
59T(4.37μS)
36T(2.66μS)
50T(3.7μS)
24T(1.77μS)
65T(4.81μS)
24T(1.77μS)
44T(3.26μS)
36T(2.66μS)
65T(4.81μS)
40T(2.96μS)
Video
IFHB
φH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : L
11T(0.81μS)
System delay
35T(2.59μS)
92T+1Bit(6.88μS)
13
37(40)
OB
42
13
702
Dmmy
OB
Active
54T(4.0μS)
36T(2.66μS)
45T(3.33μS)
24T(1.77μS)
60T(4.44μS)
24T(1.77μS)
39T(2.88μS)
36T(2.66μS)
60T(4.44μS)
40T(2.96μS)

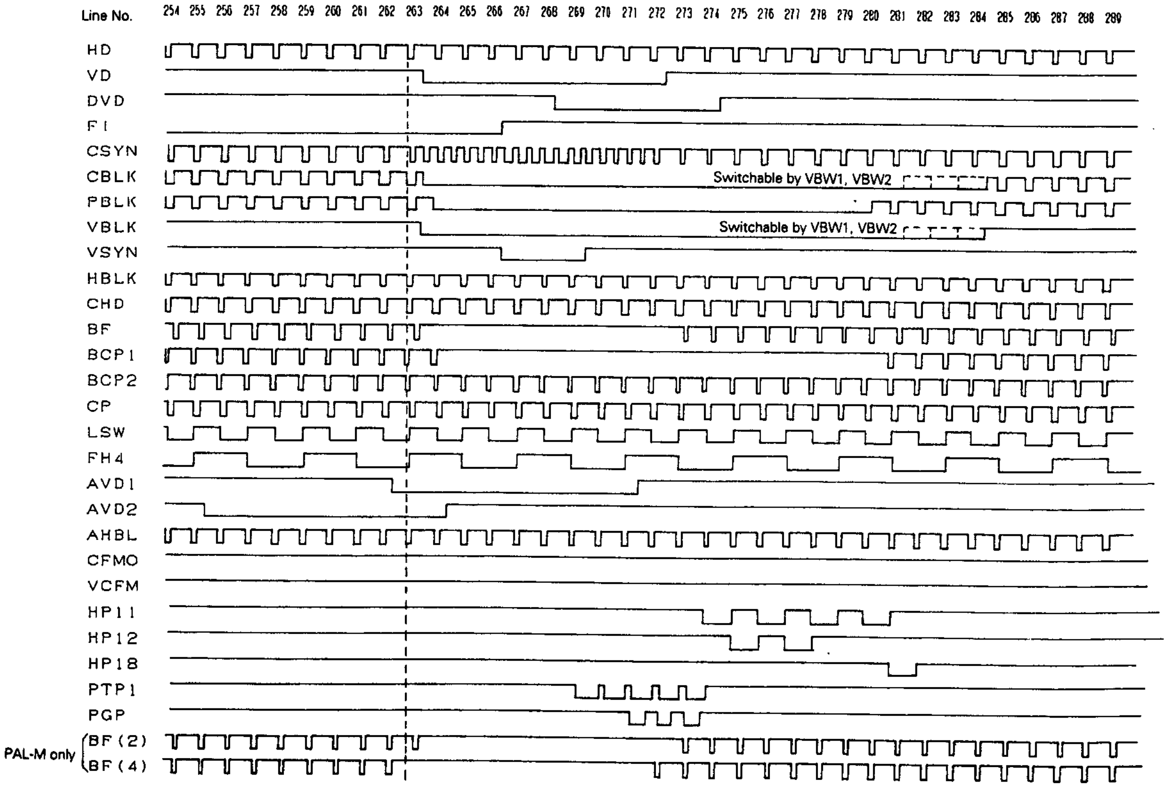
[PAL 2] H-TIMING


1H=908T=908Bit
1T=1Bit=70.4845815nS
T
HD
CBLK
Video
IFHB
φH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : H
84T(5.92μS)
167T(11.77μS)
8T(.056μS)
System delay
39T(2.75μS)
93T(6.55μS)
6
38(40)
OB
22
3
9
735
Dmmy
OB
Active
60T(4.22μS)
39T(2.74μS)
51T(3.59μS)
25T(1.76μS)
67T(4.72μS)
25T(1.76μS)
44T(3.1μS)
39T(2.74μS)
67T(4.72μS)
40T(2.81μS)
Video
IFHB
φH1
CCDout
V1
V2
V3
V4
VSUB
HBSL : L
13T(0.9μS)
System delay
25T(1.76μS)
93T(6.55μS)
8
38(40)
OB
22
3
9
735
Dmmy
OB
Active
46T(3.24μS)
39T(2.74μS)
37T(2.6μS)
25T(1.76μS)
53T(3.73μS)
25T(1.76μS)
30T(2.11μS)
39T(2.74μS)
53T(3.73μS)
40T(2.81μS)

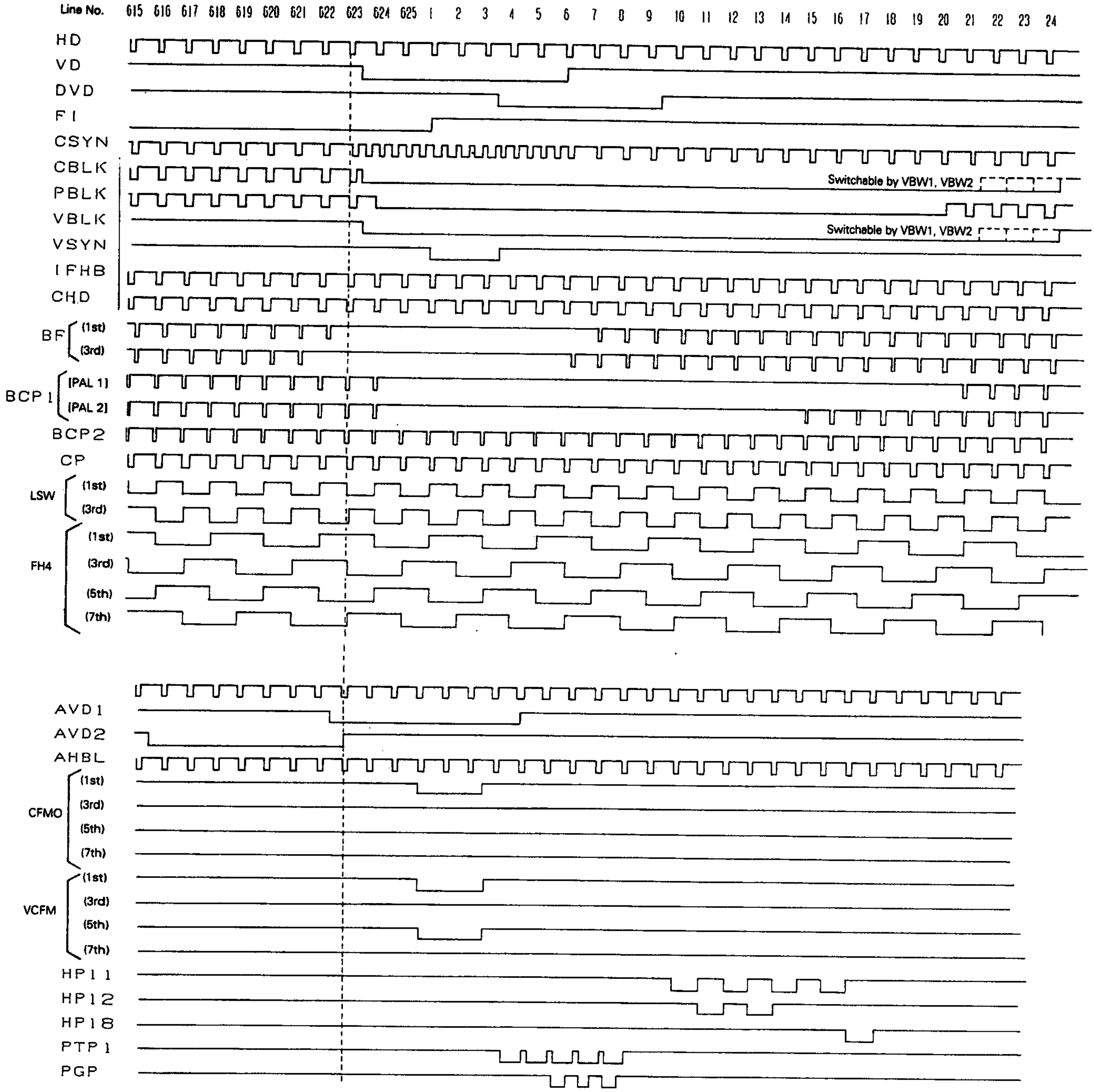
[NTSC] V-TIMING (1st field)


Line No.
517 518 519 520 521 522 523 524 525 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
HD
VD
DVD
FI
CSYN
CBLK
Switchable by VBW1, VBW2
PBLK
VBLK
Switchable by VBW1, VBW2
VSYN
HBLK
CHD
BF
BCP1
BCP2
CP
LSW
FH4
ADV1
ADV2
AHBL
CFMO
VCFM
HP11
HP12
HP18
PTP1
PGP
PAL-M only
BF(1)
BF(3)

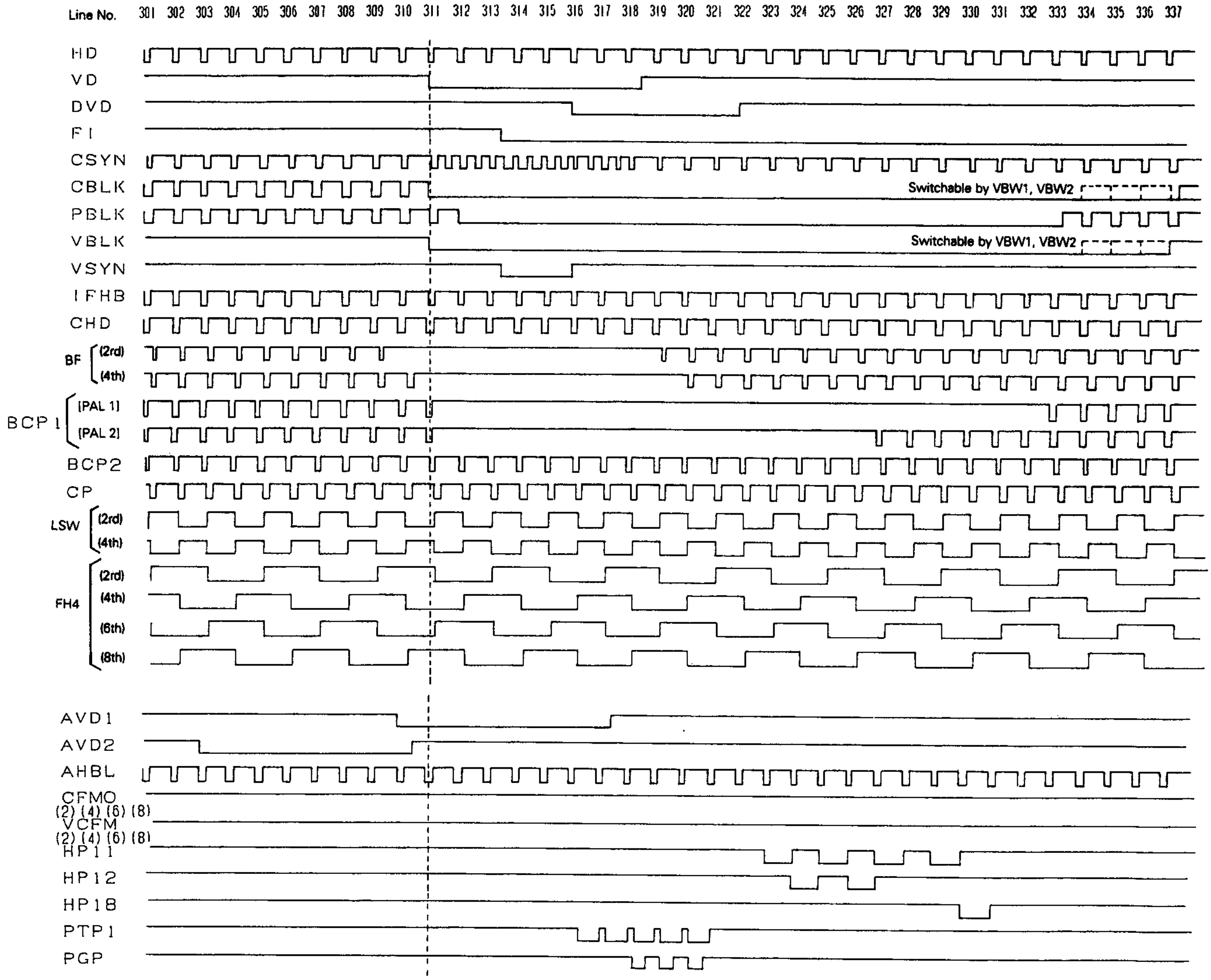
[NTSC] V-TIMING (2nd field)


Line No.
254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289
HD
VD
DVD
FI
CSYN
CBLK
Switchable by VBW1, VBW2
PBLK
VBLK
Switchable by VBW1, VBW2
VSYN
HBLK
CHD
BF
BCP1
BCP2
CP
LSW
FH4
AVD1
AVD2
AHBL
CFMO
VCFM
HP11
HP12
HP18
PTP1
PGP
PAL-M only
BF(2)
BF(4)

[PAL] V-TIMING (1st, 3rd, 5th, 7th field)

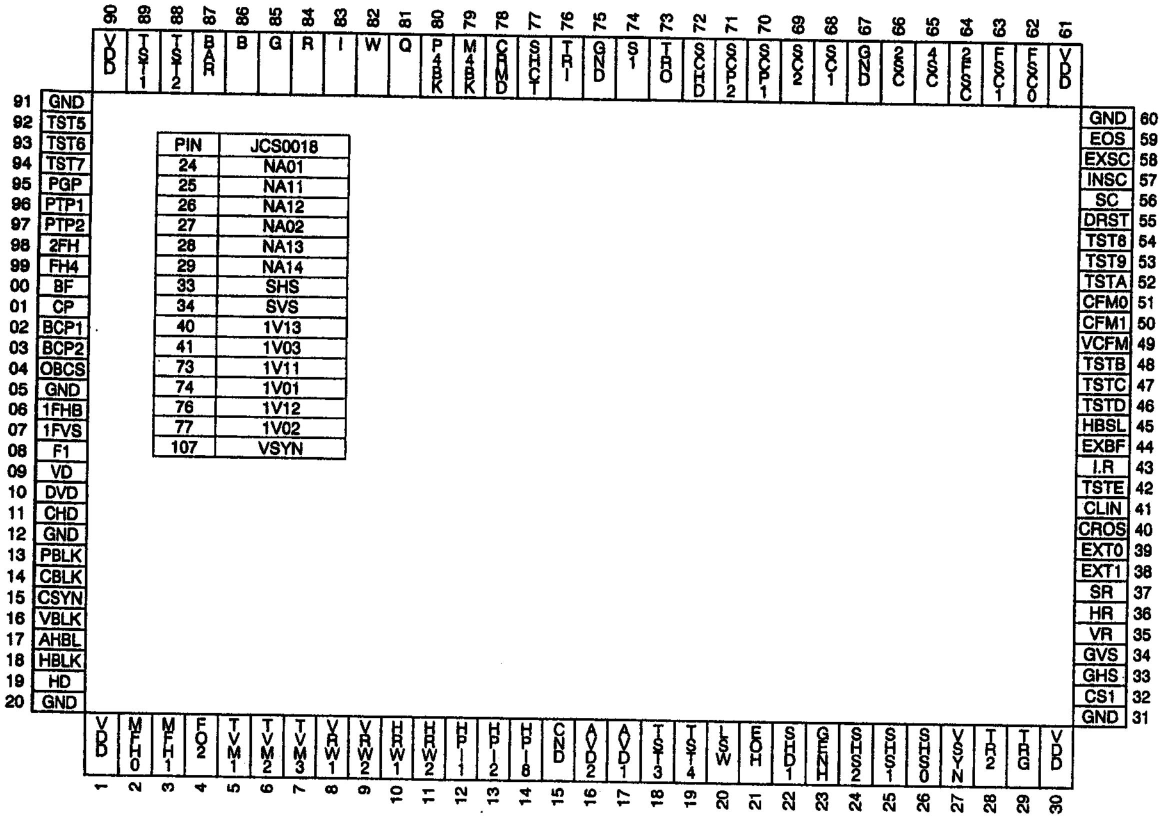

Line No.
615 616 617 618 619 620 621 622 623 624 625 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
HD
VD
DVD
FI
CSYN
CBLK
PBLK
VBLK
VSYN
IFHB
CHD
BF
(1st)
(3rd)
BCP1
(PAL 1)
(PAL 2)
BCP2
CP
LSW
(1st)
(3rd)
FH4
(1st)
(3rd)
(5th)
(7th)
Switchable by VBW1, VBW2
Switchable by VBW1, VBW2
AVD1
AVD2
AHBL
CFMO
(1st)
(3rd)
(5th)
(7th)
VCFM
(1st)
(3rd)
(5th)
(7th)
HP11
HP12
HP18
PTP1
PGP

[PAL] V-TIMING (2nd, 4th, 6th, 8th field)


Line No.
301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337
HD
VD
DVD
FI
CSYN
CBLK
Switchable by VBW1, VBW2
PBLK
VBLK
Switchable by VBW1, VBW2
VSYN
IFHB
CHD
BF
(2rd)
(4th)
BCP1
(PAL 1)
(PAL 2)
BCP2
CP
LSW
(2rd)
(4th)
FH4
(2rd)
(4th)
(6th)
(8th)
AVD1
AVD2
AHBL
CFMO
(2) (4) (6) (8)
VCFM
(2) (4) (6) (8)
HP11
HP12
HP18
PTP1
PGP

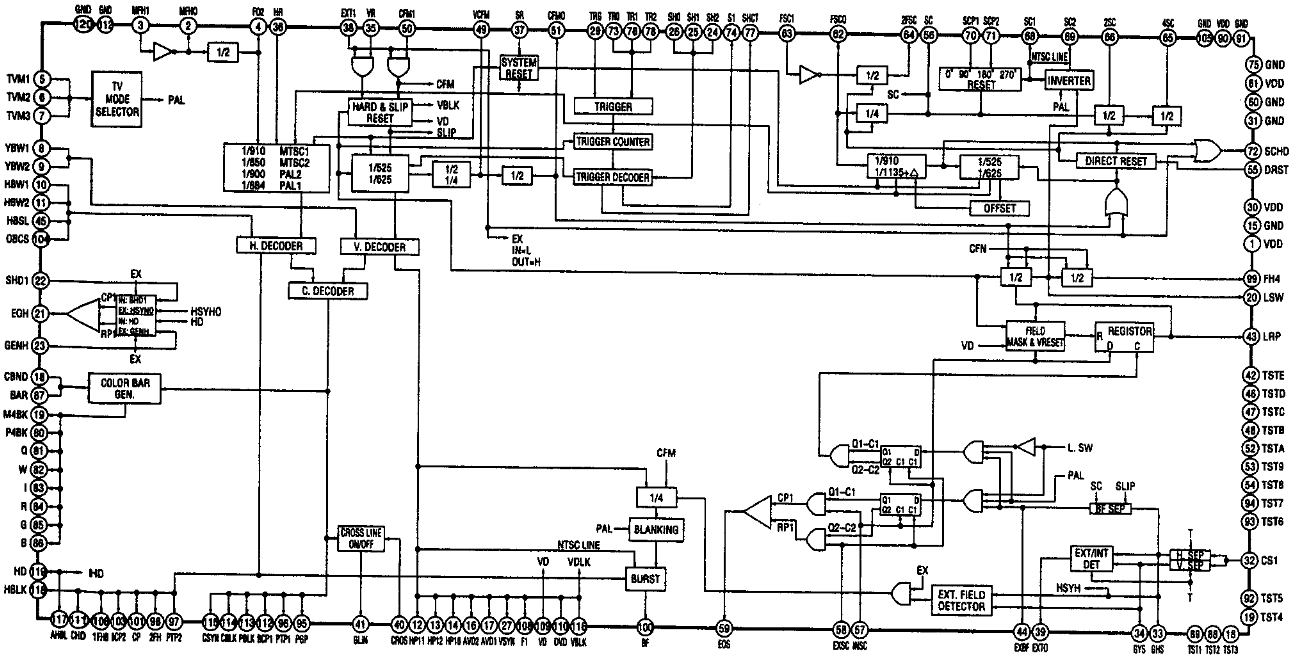
■ JCS0023 【JVC】

(Sync Signal Generator)



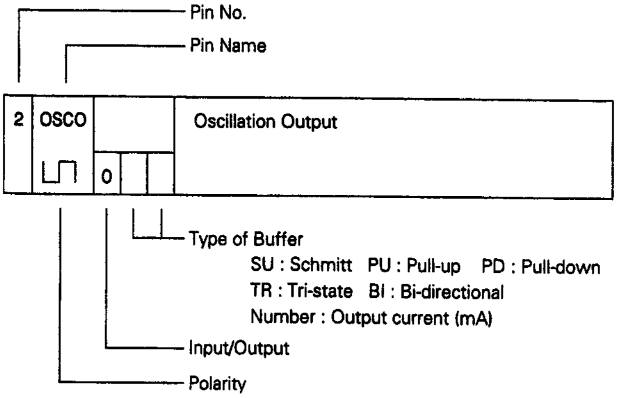
90 VDD
89 TST1
88 TST2
87 BAR
86 B
85 G
84 R
83 I
82 W
81 Q
80 P4BK
79 M4BK
78 CBMD
77 SHCT
76 TR1
75 GND
74 S1
73 TR0
72 SCHD
71 SCP2
70 SCP1
69 SC2
68 SC1
67 GND
66 2SC
65 4SC
64 2FSC
63 FSC1
62 FSC0
61 VDD
91 GND
92 TST5
93 TST6
94 TST7
95 PGP
96 PTP1
97 PTP2
98 2FH
99 FH4
00 BF
01 CP
02 BCP1
03 BCP2
04 OBCS
05 GND
06 1FHB
07 1FVS
08 F1
09 VD
10 DVD
11 CHD
12 GND
13 PBLK
14 CBLK
15 CSYN
16 VBLK
17 AHBL
18 HBLK
19 HD
20 GND
60 GND
59 EOS
58 EXSC
57 INSC
56 SC
55 DRST
54 TST8
53 TST9
52 TSTA
51 CFM0
50 CFM1
49 VCFM
48 TSTB
47 TSTC
46 TSTD
45 HBSL
44 EXBF
43 LR
42 TSTE
41 CLIN
40 CROS
39 EXT0
38 EXT1
37 SR
36 HR
35 VR
34 GVS
33 GHS
32 CS1
31 GND
1 VDD
2 MFH0
3 MFH1
4 FO2
5 TVM1
6 TVM2
7 TVM3
8 VRW1
9 VRW2
10 HRW1
11 HRW2
12 HP11
13 HP12
14 HP18
15 GND
16 AVD2
17 AVD1
18 TST3
19 TST4
20 LSW
21 EOH
22 SHD1
23 GENH
24 SHS2
25 SHS1
26 SHS0
27 VSYN
28 TR2
29 TRG
30 VDD

PIN	JCS0018
24	NA01
25	NA11
26	NA12
27	NA02
28	NA13
29	NA14
33	SHS
34	SVS
40	1V13
41	1V03
73	1V11
74	1V01
76	1V12
77	1V02
107	VSYN



TV MODE SELECTOR
PAL
1/2
SYSTEM RESET
HARD & SLIP RESET
CFM
VBLK
VD
SLIP
TRIGGER
TRIGGER COUNTER
TRIGGER DECODER
1/910 1/850 1/900 1/884
MTSC1 MTSC2 PAL2 PAL1
1/525 1/625
1/2 1/4
EX IN=L OUT=H
H. DECODER
V. DECODER
C. DECODER
HSYHO
HD
COLOR BAR GEN.
IHD
0° 90° 180° 270° RESET
NTSC LINE
INVERTER
1/4
1/910 1/1135+△
OFFSET
DIRECT RESET
CFN
FIELD MASK & VRESET
REGISTOR
L. SW
Q1-C1
Q2-C2
CP1
RP1
SC SLIP
BF SEP
EXT/INT DET
H SEP
V SEP
HSYH
EXT. FIELD DETECTOR
1/4
BLANKING
CROSS LINE ON/OFF
BURST
NTSC LINE
VD VDLK
GND
VDD
SCHD
DRST
FH4
LSW
LRP
TSTE
TSTD
TSTC
TSTB
TSTA
TST9
TST8
TST7
TST6
CS1
TST5
TST4
TVM1
TVM2
TVM3
YBW1
YBW2
HBW1
HBW2
HBSL
OBCS
SHD1
EOH
GENH
CBND
BAR
M4BK
P4BK
Q
W
I
R
G
B
HD
HBLK
AHBL CHD 1FHB BCP2 CP 2FH PTP2
CSYN CBLK PBLK BCP1 PTP1 PGP
CLIN
CROS HP11 HP12 HP18 AVD2 AVD1 VSYN F1 VD DVD VBLK
BF
EOS
EXSC INSC
EXBF EXT0
GVS GHS
TST1 TST2 TST3

Terminal Specifications of JCS0023 (4th Revision)


Pin No.
Pin Name
2
OSCO
Oscillation Output
0
Type of Buffer
SU : Schmitt PU : Pull-up PD : Pull-down
TR : Tri-state BI : Bi-directional
Number : Output current (mA)
Input/Output
Polarity

Pin No.	Pin Name	Function
1	VDD	+5 Power supply
2	MFHO	Synchronizing oscillation output O Output terminal for built-in oscillator
3	MFHI	Synchronizing oscillation input I Input terminal for built-in oscillator
4	F02	1/2 divided output O 9 1/2 divided output of synchronizing oscillator
5	TVM1 —	TV mode 1 I PU
6	TVM2 —	TV mode 2 I PU
7	TVM3 —	TV mode 3 I PU

	NTSC1 1820FH	NTSC2 1716FH	PAL2 1816FH	PAL1 1728FH	PALM 1716FH	SECAM 1716FH
TVM1	L	H	L	H	L	H
TVM2	L	L	H	H	L	L
TVM3	L	L	L	L	H	H

Pin No.	Pin Name	Function
8	VBW1 —	V. blanking control 1 I PU
9	VBW2 —	V. blanking control 2 I PU

VBW1	L	H	L	H
VBW2	L	L	H	H
NTSC1	21H	20H	19H	18H
NTSC 2	21H	20H	19H	18H
PAL1	26H	25H	24H	23H
PAL2	26H	25H	24H	23H
PALM	21H	20H	19H	18H
SECAM	26H	25H	24H	23H

Pin No.	Pin Name	Function
10	HBW1 —	H. blanking control 1 I PU
11	HBW2 —	H. blanking control 2 I PU

HBW1	L	H	L	H
HBW2	L	L	H	H
NTSC1	157T	156T	154T	152T
NTSC2	143T	147T	146T	152T
PAL1	162T	159T	156T	153T
PAL2	170T	167T	164T	161T
PALM	148T	147T	146T	144T
SECAM	162T	159T	156T	153T

Pin No.	Pin Name	Function
12	HP11	H. pulse 11 O 9 H. pulse to be active at 11H, 13H, 15H and 17H.
13	HP12	H. pulse 12 O 9 H. pulse to be active at 12H and 14H.
14	HP18	H. pulse 18 O 9 H. pulse to be active at 18H.
15	GND	Ground
16	AVD2	Pre-vertical drive pulse 2 O 9 Vertical drive pulse whose phase is 8H ahead of VD pulse. Functions as subcarrier blanking for SECAM system.
17	AVD1	Pre-vertical drive pulse 1 O 9 Vertical drive pulse whose phase is 1H ahead of VD pulse.
18	TST3 —	Test terminal 3 I PU Set this terminal open in general.
19	TST4 —	Test terminal 4 I PU Set this terminal open in general.
20	LSW	Line switch O 9 Half-divided FH output. Switches color difference signal of neighboring lines by 180° in phase for PAL system.
21	EOH —	H. synchronizing digital phase comparison output O TR 13 As compared with leading edge of SHDI; when internal HD has advanced phase: Low level, when internal HD has lagged phase: High level, when internal HD is in-phase: High impedance.
22	SHDI	H. synchronizing digital phase comparison input (trailing detection) I SH PU Input of horizontal drive signal originating from subcarrierI. Active when EXTI is low level. When this is inactive, GHS (No. 33) is internally connected.
23	GENH	H. synchronizing digital phase comparison input (trailing detection) I SH PU Input for external synchronization, horizontal synchronization and phase adjustment. Active when EXTI is high level. When this is inactive, HD (No. 119) is internally con-nected.

Pin No.	Pin Name	Function
24	SHS2 —	Shutter speed setting 2 Random shutter setting fufnction (Refer to the specifications.) I PU
25	SHS1 —	Shutter speed setting 1 Random shutter setting function (Refer to the specifications.) I PU
26	SHS0 —	Shutter speed setting 0 Random shutter setting function (Refer to the specifications.) I PU
27	VSYN ⊔	V. sync. output Vertical synchronizing signal of V. EQ pulse width. O 9
28	TR2 —	Sync. reset mode setting For sync. reset mode setting when random shutter setting functions is activated. I PU
29	TRG —	Trigger input Trigger input to activate random shutter setting functio. (Refer to the random shutter specifications.) I PU
30	VDD	+5V power supply
31	GND	Ground
32	CSI ⊔	Ext. composite sync. signal input To input external composite synchronizing signal for horizontal and vertical separation and ext. sync. signal input detection. I SH PU
33	GHS ⊔	Horizontal separate sync. Horizontal separate signal of external composite synchronizing signal. 1/2 equivalent pulse is not included. O 9
34	GVS ⊔	Vertical separate sync. Vertical separate signal of external composite synchronizing signal. 1/2 equivalent pulse is not included. O 9

SHS2	SHS1	SHS0	Shutter speed NTSC	Shutter speed PAL
L	L	L	1/60	1/50
L	L	H	1/100	1/120
L	H	L	1/250	
L	H	H	1/500	
H	L	L	1/1000	
H	L	H	1/2000	
H	H	L	1/4000	
H	H	H	1/10000	

Pin No.	Pin Name	Function
35	VR ⊔	Vertical reset External synchronizing input by slip system. If this system is input in vertical sync. period, hard reset is activated. Input in other period stops internal counter for a period of pulse width. I PU
36	HR ⎺⎽	Horizontal reset Presets horizontal component 1T before rise of HD. Jitters in a period shorter than 140 ns are absorbed. However, operation is not secured for continuous input. I PU
37	SR ⎺⎽	System reset Inside of IC is forcibly initialized regardless of internal or external synchronization. VR and HR inputs are ineffective. Jitters in a period shorter than 140 ns are absorbed. I PU
38	EXTI —	Internal/External synchronization setting input L : Internal synchronization H : External synchronization I PD
39	EXTO —	Internal/External synchronization setting output L: Without CSI input After detection of no SHS, another SHS is not detected for a period of 8 fields. H: With CSI input After detection of SHS, 200 or more SHS's are detected in 1 vertical period. O 9
40	CROS —	Cross ON/OFF input L: To stop cross output H: To activate cross output operation For detail, refer to supplementary specifications of respective terminals. I PD
41	CLIN ⊓	Cross output To output a cross in the center of screen. For detail, refer to supplementary specifications of respective terminals. O 9
42	TSTE —	Test terminal E Set this terminal open in general. I PU
43	LR ⊔	Line reset When EXTI is external synchronization (High level), setting signal is supplied to LSW. When internal burst is ahead of external burst in phase, High level is output. When internal burst is behind external burst in phase, Low level is output (for 6 clocks of SC). Phase comparison is not operated for one field after output. For detail, refer to supplementary specifications of respective terminals. O 9

Pin No.	Pin Name	Function
44	EXBF ⊔	Brust flag separate output With detection of one or more H. sync pulse from CSI input, pulse whose width is for 6 cycles of subcarrier is output. For details, refer to supplementary specifications of respective terminals. O 9
45	HBSL —	Horizontal blanking select To switch output position of IFHB (106). L: System delya 900 ns approx. H: System delay 450 ns approx. I PU
46	TSTD —	Test terminal D Set this terminal open in general. BI PU 9
47	TSTC —	Test terminal C Set this terminal open in general. BI PU 9
48	TSTB —	Test terminal B Set this terminal open in general. I PU
49	VCFM ⊔	VTR color frame Color frame for VTR exclusively. 2-field period for NTSC1, NTSC2 and PAL. 4-field period for PAL1, PAL2 and SECAM. O 9
50	CFMI ↓	Color frame input Effective with EXTI being low level. Uled for color frame control in external synchronization. Reset to synchronizing circuit by the slip system. I SH PU
51	CFMO ⊔	Color frame output Pulse output at the beginning of every color frame. 4-field period for NTSC1 and NTSC2. 8-field period for PAL1, PAL2, PALM and SECAM. O 9
52	TSTA —	Test terminal A Set this terminal open in general. I PU
53	TST9 —	Test terminal 9 Set this terminal open in general. I PU
54	TST8 —	Test terminal 8 Set this terminal open in general. I PU
55	DRST —	Direct reset When EXTI is low level, the following operations are realized. To switch reset operation of horizontal counter for subcarrier. To reset color frame synchronizing with horizontal counter with High level; To reset color frame with Low level. I PU
56	SC ⊓⊔	Subcarrier output To monitor subcarrier signal connected internally with digital phase comparator. When phase of SC1 (68) is 0°, this output is inphase. O 9
57	INSC ↑	Internal subcarrier input Shall be connected with SC (56). Effective when EXBF is low level. Pulse rise is detected. I
58	EXSC ↑	External subcarrier input Effective when EXBF is low level. Pulse rise is detected. I
59	EOS —	Digital phase comparison output for subcarrier As compared with leading edge of EXSC; when internal SC has advanced phase : Low level, when internal SC has lagged phase : High level, when internal SC is in phase : High impedance. O TR 13
60	GND	Ground
61	VDD	+5V power supply
62	FSCO ⊔⊓	Oscillator output for subcarrier O
63	FSCI ⊓⊔	Oscillator input for subcarrier I
64	2FSC ⊓⊔	Double subcarrier output Half-divided oscillator output for subcarrier O 13

Pin No.	Pin Name	Function
65	4SC	1/4 subcarrier output 1/4-divided output of subcarrier frequency O 9
66	2SC	1/2 subcarrier output 1/2-divided output of subcarrier frequency O 9
67	GND	Ground
68	SC1	Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2. In PAL mode, phase is not changed every H. O 9
69	SC2	Subcarrier 2 Subcarrier frequency output whose phase is 90° ahead of SC1. Phase is changed by SCP1 and SCP2. In PAL mode, phase is inverted by 180° every H. O 9
70	SCP1 —	Subcarrier select 1 Note: SC2 is expressed based on SC1. I PD
71	SCP1 —	Subcarrier select 2 I PD
72	SCHD	Subcarrier horizontal driver Horizontal drive pulse originating from subcarrier frequency. O 13
73	TRO —	Random shutter control system setting input To set random shutter control system. L: 8-stage default control, H: Pulse width continuous control (Refer to the specifications of random shutter setting function.) I PD
74	SI	Stroboscope index output In normal operation, this output is for stroboscopic lamp emitting time. In random shutter operation, this output is for video output time. (Refer to the specifications of random shutter setting function.) O 9

SCP2	SCP1	SC1	SC2
L	L	0°	90° ahead (270°)
L	H	90°	90° ahead (0°)
H	L	180°	90° ahead (90°)
H	H	270°	90° ahead (180°)

Pin No.	Pin Name	Function
75	GND	Ground
76	TR1 —	Random reset system setting input To determine reset system setting system. L: SYNC reset system, H: SYNC non-reset system. (Refer to the specifications of random shutter setting function.) I PD
77	SHCT —	Shutter control output Electronic shutter control signal. Shall be connected to SHCT (19) of TG (μPD9438GK). (Refer to the specifications of random shutter setting function.) O 9
78	CBMD —	SMPTE/FULL To switch color bar signal to SMPTE or FULL. L: Full Field mode, H: SMPTE mode — Effective only with BAR signal of low level. I PU
79	M4BK	Color bar signal O 9
80	P4BK	Color bar signal O 9
81	Q	Color bar signal O 9
82	W	Color bar signal O 9
83	I	Color bar signal O 9

	BAR	CBMD	I	W
NTSC1 NTSC2	H L L	X H L	L Effective L	L Effective (75%W) L
PAL1 PAL2	H L L	X H L	L Effective L	L Effective (75%W) Effective (100W)
PALM	H L L	X H L	L Effective L	L Effective (75%W) Effective (100W)
SECAM	H L L	X H L	L Effective L	L Effective (75%W) L

	Q	P4BK	M4BK
NTSC1 NTSC2	L Effective L	L Effective L	L Effective L
PAL1 PAL2	L Effective L	L Effective L	L Effective L
PALM	L Effective L	L Effective L	L Effective L
SECAM	L Effective L	L Effective L	L Effective L

Pin No.	Pin Name	Function
84	–R ⎍	Color bar signal O 9
85	G ⎍	Color bar signal O 9
86	B ⎍	Color bar signal O 9

	BAR	C3MD	B	G	R
NTSC1	H	X	L	L	L
NTSC2	L	X	Effective	Effective	Effective
PAL1	H	X	L	L	L
PAL2	L	X	Effective	Effective	Effective
PALM	H	X	L	L	L
	L	X	Effective	Effective	Effective
SECAM	H	X	L	L	L
	L	X	Effective	Effective	Effective

Pin No.	Pin Name	Function
87	BAR —	Color bar control (ON/OFF) I PU

BAR	R, G, B, I, Q, W, P4BK, M4BK
L	Effective
H	Fixed at Low level

Pin No.	Pin Name	Function
88	TST2 —	Test terminal 2 Set this termfinal open in general. I PU
89	TST1 —	Test terminal 1 Set this termfinal open in general. I PU
90	VDD	+5V power supply
91	GND	Ground
92	TST5 —	Test terminal 5 Set this termfinal open in general. I PU
93	TST6 —	Test terminal 6 Set this termfinal open in general. I PU
94	TST7 —	Test terminal 7 Set this termfinal open in general. O 9

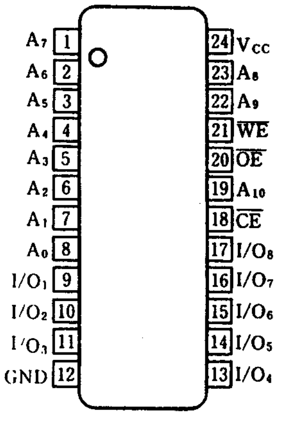
Pin No.	Pin Name	Function
95	PGP ⊔	Pilot gate pulse Uniform voltage level of two signals, one passes the 1FH delay line and the other does not pass the 1H line, with each other in order to compensate attenuation caused by the delay line. O 9
96	PTP1 ⊔	Pilot pulse 1 Uniform voltage level of two signals, one passes the 1H delay line and the other does not pass the 1H line, with each other in order to compensate attenuation caused by the delay line. O 9
97	PTP2 ⊔	Pilot pulse 2 Used to control video level. O 9
98	2FH ⊓⊔	Double FH O 9

NTSC1	NTSC2	PAL1	PAL2	PALM	SECAM
31.468	31.468	31.25	31.25	31,468	31.25

Pin No.	Pin Name	Function
99	FH4 ⊓⊔	1/4FH Half-divided output of LSW. Equivalent to 25 Hz in PAL mode. O 9
100	BF ⊔	Burst flag Regulates period to insert subcarrier into back porch of horizontal sync. signal. Functions to switch chromaticity signal for every line in SECAM mode. O 9
101	CP ⊔	Clamp pulse Signal to clamp reference voltage of black level. O 9
102	BCP1 ⊔	Black clamp pulse 1 Fixes black level of CCD output signal. O 9
103	BCP2 ⊔	Black clamp pulse 2 Fixes black level of CCD output signal (at every H output). O 9
104	OBCS —	Optical black pulse select Switching of output position of horizontal BCP1 and BCP2. L: Frontward output H: Backward output I PU

Pin No.	Pin Name	Function
105	GND	Ground
106	IFHB ⊔	Interface horizontal blanking Output pulse that is narrower than HBLK both in leading edge and trailing edge. 0 9
107	IFVS ⊔	Interface vertical synchronization Normal function: To output vertical synchronization signal having the same pulse width of V. EQ pulse. Random shutter setting function: To output the same signal as V. sync. signal in the fall-fime. 0 9
108	FI —	Field index Field discrimination signal. L: Field that HD and VD fall at the same time. H: Field that there is a time lag of 0.5H in falling between HD and VD. 0 9
109	VD ⊔	Vertical drive pulse Pulse output at the beginning of every field. Used as the vertical timing standard for the set. 0 9
110	DVD ⊔	Delayed vertical drive pulse Vertical drive signal that lags behind VD pulse. Controls camera's scanning timing and regulates activation time of sawtooth waveform of vertical deflection circuit. 0 9
111	CHD ⊔	Delayed horizontal drive pulse Controls camera's scanning timing. Regulates activation time of sawtooth waveform of horizontal deflection circuit. 0 9
112	GND	Ground
113	PBLK ⊔	Pre-blanking Composite blanking signal used for video processing. As compared with CBLK signal, this signal is narrower in the leading edge. 0 9
114	CBLK ⊔	Composite blanking Horizontal and vertical composite blanking signal. 0 9
115	CSYN ⊔	Composite sync. Composite synchronizing signal comprising of four signals of HSYN, VSYN, EQ and SAW. 0 9
116	VBLK ⊔	V. blanking Vertical blanking signal whose pulse width can be changed with VBW1 and VBW2. 0 9
117	AHBL ⊔	Pre-horizontal blanking Pulse that HBLK is advanced in breaking of leading edge. 0 9
118	HBLK ⊔	H. blanking Horizontal blanking pulse whose pulse width can be changed with HBW1 and HBW2. 0 9
119	HD ⊔	H. drive Pulse synchronized with beginning of respective lines. Used as horizontal timing standard of the set. 0 13
120	GND	Ground

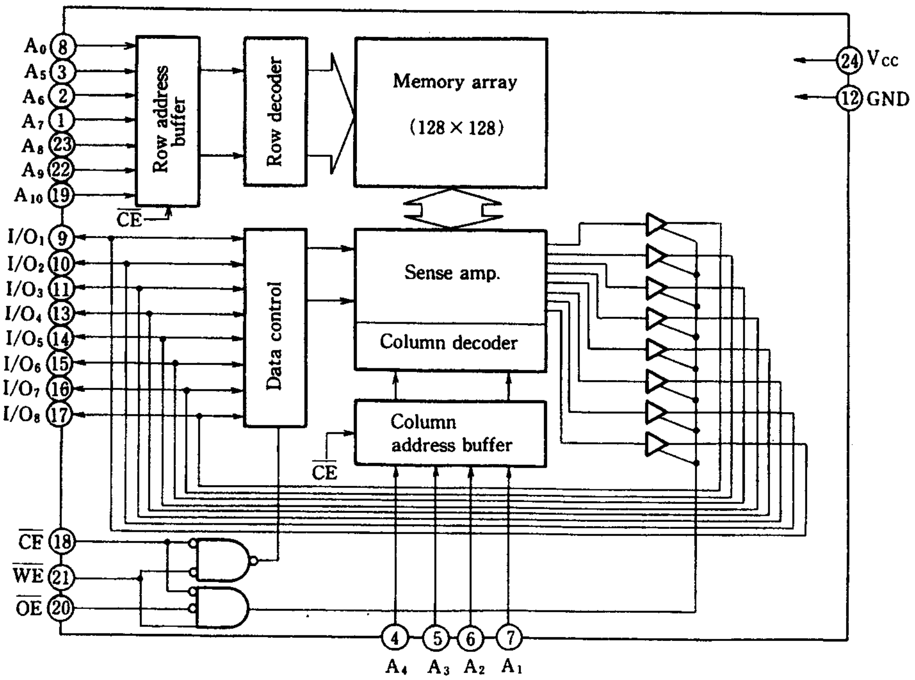
LH5116NA-10 【SHARP】
(C-MOS 16K Static RAM)


A7 1
A6 2
A5 3
A4 4
A3 5
A2 6
A1 7
A0 8
I/O1 9
I/O2 10
I/O3 11
GND 12
24 Vcc
23 A8
22 A9
21 WE
20 OE
19 A10
18 CE
17 I/O8
16 I/O7
15 I/O6
14 I/O5
13 I/O4

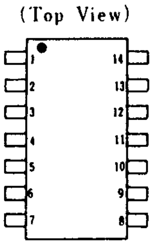
Top View

Pin function

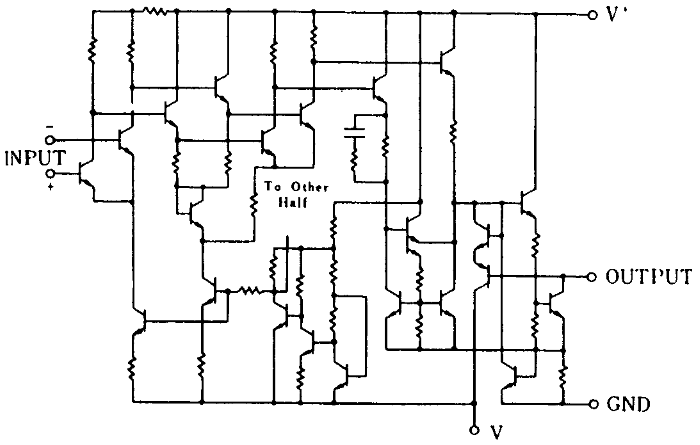
Symbol	Designation
A_0 ~ A_{10}	Address input
$\overline{CE}$	Chip enable input
$\overline{OE}$	Output enable input
$\overline{WE}$	Write enable input
I/O_1 ~ I/O_8	Data input/output
Vcc	Power supply
GND	Ground


A0 8
A5 3
A6 2
A7 1
A8 23
A9 22
A10 19
CE
Row address buffer
Row decoder
Memory array
(128 × 128)
24 Vcc
12 GND
I/O1 9
I/O2 10
I/O3 11
I/O4 13
I/O5 14
I/O6 15
I/O7 16
I/O8 17
Data control
Sense amp.
Column decoder
Column address buffer
CE
CE 18
WE 21
OE 20
4
5
6
7
A4
A3
A2
A1

LM319M 【TEXAS】
(Voltage Comparator)

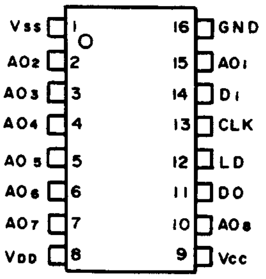

(Top View)
1
2
3
4
5
6
7
14
13
12
11
10
9
8

1	NC
2	NC
3 (2)	GND 1
4 (3)	+INPUT
5 (4)	−INPUT
6 (5)	V^-
7 (6)	OUTPUT 2
8 (7)	GND 2
9 (8)	+INPUT 2
10(9)	−INPUT 2
11(10)	V^+
12(1)	OUTPUT 1
13	NC
14	NC

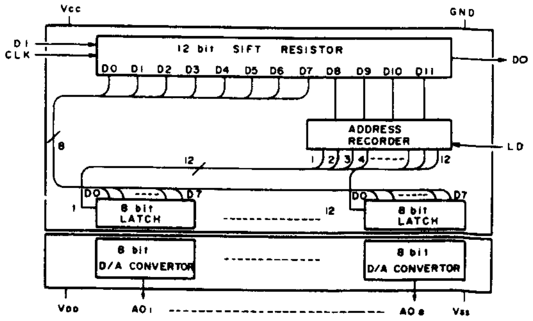

V⁺
−
INPUT
+
To Other Half
OUTPUT
GND
V

MB88342PF 【FUJITSU】
(D/A Converter)

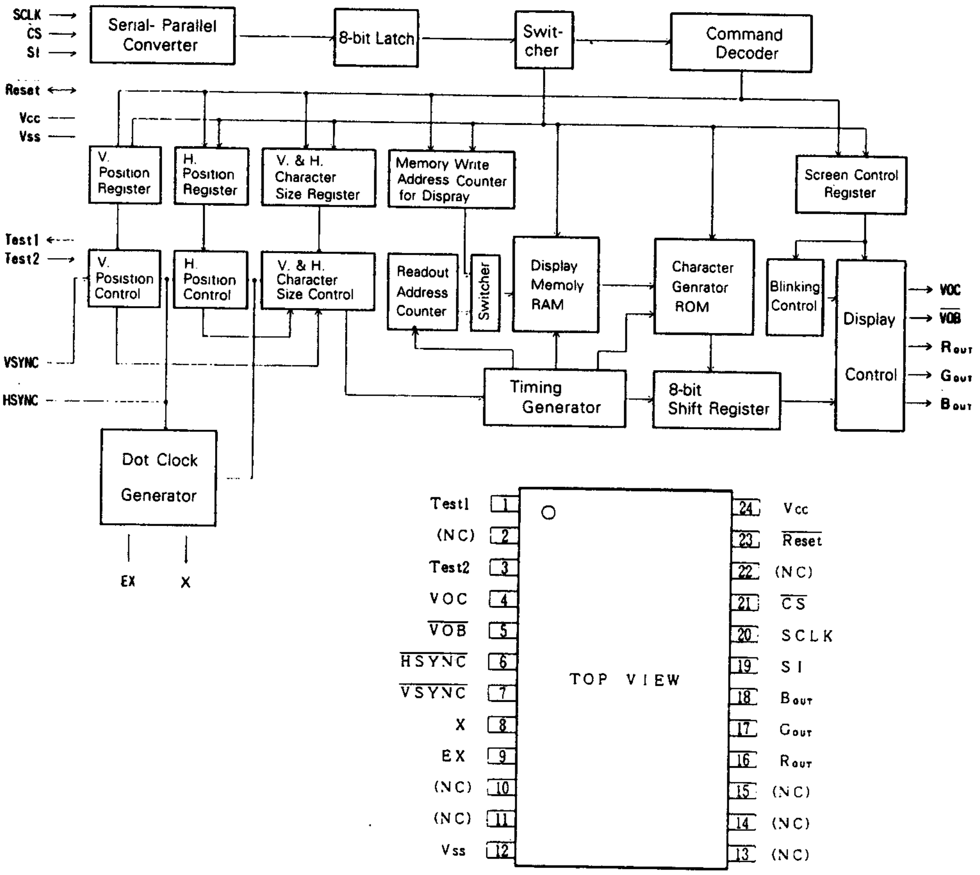
(TOP VIEW)


Vss 1
AO2 2
AO3 3
AO4 4
AO5 5
AO6 6
AO7 7
VDD 8
16 GND
15 AO1
14 DI
13 CLK
12 LD
11 DO
10 AO8
9 Vcc

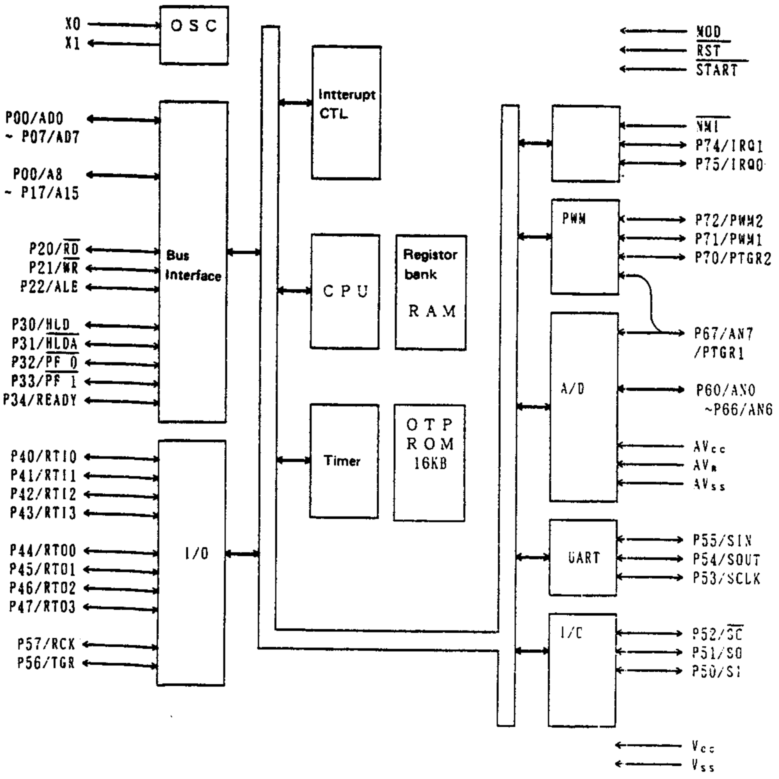
(FPT-16P-M02)

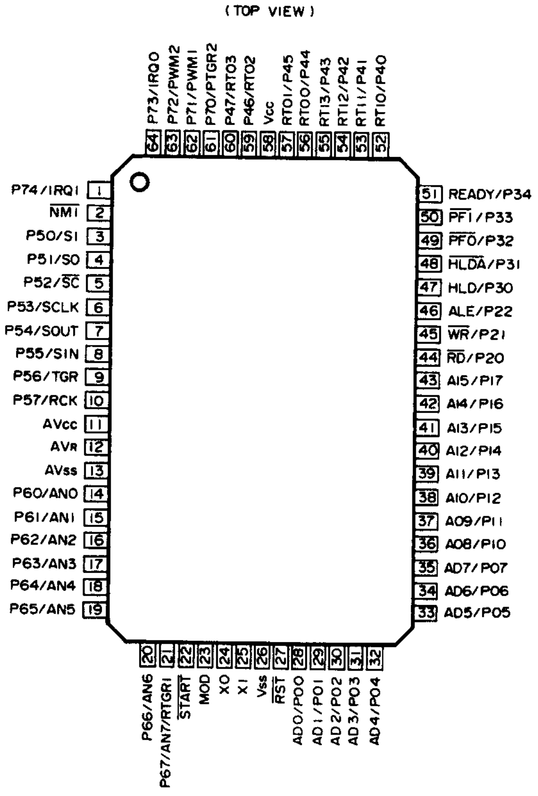

Vcc
GND
DI
CLK
12 bit SIFT RESISTOR
D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11
DO
ADDRESS RECORDER
LD
8
12
1 2 3 4 ----- 12
D0 ----- D7
8 bit LATCH
1
12
8 bit D/A CONVERTOR
VDD
AO1
AO8
Vss

■ MB89012-109 【FUJITSU】
(TV Display Controler)


SCLK
CS
SI
Reset
Vcc
Vss
Test1
Test2
VSYNC
HSYNC
Serial- Parallel Converter
8-bit Latch
Swit-cher
Command Decoder
V. Position Register
H. Position Register
V. & H. Character Size Register
Memory Write Address Counter for Dispray
Screen Control Register
V. Posistion Control
H. Position Control
V. & H. Character Size Control
Readout Address Counter
Switcher
Display Memoly RAM
Character Genrator ROM
Blinking Control
Display Control
Timing Generator
8-bit Shift Register
Dot Clock Generator
EX
X
VOC
VOB
ROUT
GOUT
BOUT
Test1 1
(NC) 2
Test2 3
VOC 4
VOB 5
HSYNC 6
VSYNC 7
X 8
EX 9
(NC) 10
(NC) 11
Vss 12
TOP VIEW
24 Vcc
23 Reset
22 (NC)
21 CS
20 SCLK
19 SI
18 BOUT
17 GOUT
16 ROUT
15 (NC)
14 (NC)
13 (NC)

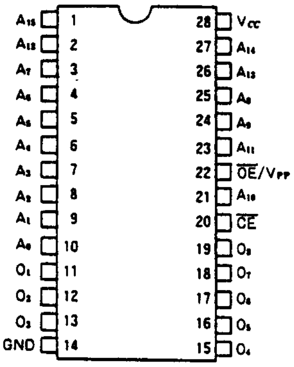
■ MB89T715APF 【FUJITSU】
(8-Bit Micro Computer)

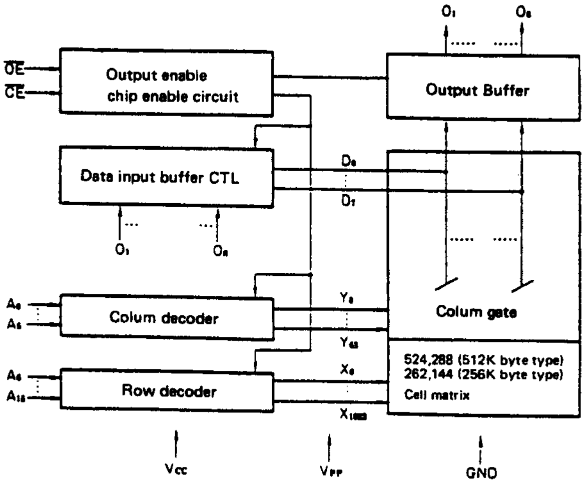

X0
X1
OSC
P00/AD0 ~ P07/AD7
P00/A8 ~ P17/A15
P20/RD
P21/WR
P22/ALE
P30/HLD
P31/HLDA
P32/PF 0
P33/PF 1
P34/READY
Bus Interface
P40/RT10
P41/RT11
P42/RT12
P43/RT13
P44/RT00
P45/RT01
P46/RT02
P47/RT03
P57/RCK
P56/TGR
I/O
Intterupt CTL
CPU
Registor bank RAM
Timer
OTP ROM 16KB
MOD
RST
START
NMI
P74/IRQ1
P75/IRQ0
PWM
P72/PWM2
P71/PWM1
P70/PTGR2
P67/AN7 /PTGR1
A/D
P60/AN0 ~P66/AN6
AVcc
AVR
AVss
UART
P55/SIN
P54/SOUT
P53/SCLK
I/C
P52/SC
P51/SO
P50/SI
Vcc
Vss


(TOP VIEW)
64 P73/IRQ0
63 P72/PWM2
62 P71/PWM1
61 P70/PTGR2
60 P47/RTO3
59 P46/RTO2
58 Vcc
57 RTO1/P45
56 RTO0/P44
55 RT13/P43
54 RT12/P42
53 RT11/P41
52 RT10/P40
P74/IRQ1 1
NMI 2
P50/SI 3
P51/SO 4
P52/SC 5
P53/SCLK 6
P54/SOUT 7
P55/SIN 8
P56/TGR 9
P57/RCK 10
AVcc 11
AVR 12
AVss 13
P60/AN0 14
P61/AN1 15
P62/AN2 16
P63/AN3 17
P64/AN4 18
P65/AN5 19
51 READY/P34
50 PF1/P33
49 PF0/P32
48 HLDA/P31
47 HLD/P30
46 ALE/P22
45 WR/P21
44 RD/P20
43 A15/P17
42 A14/P16
41 A13/P15
40 A12/P14
39 A11/P13
38 A10/P12
37 A09/P11
36 A08/P10
35 AD7/P07
34 AD6/P06
33 AD5/P05
20 P66/AN6
21 P67/AN7/RTGR1
22 START
23 MOD
24 XO
25 X1
26 Vss
27 RST
28 AD0/P00
29 AD1/P01
30 AD2/P02
31 AD3/P03
32 AD4/P04

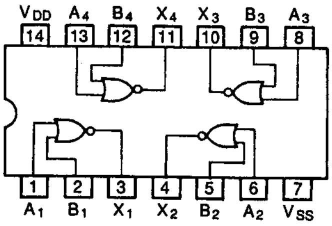
■ MBM27C512-20CZ 【FUJITSU】
(512K Byte one time P-ROM)

(TOP VIEW)


A15 1
A12 2
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
A0 10
O1 11
O2 12
O3 13
GND 14
28 Vcc
27 A14
26 A13
25 A8
24 A9
23 A11
22 OE/Vpp
21 A10
20 CE
19 O8
18 O7
17 O6
16 O5
15 O4


O1
O8
OE
CE
Output enable chip enable circuit
Output Buffer
Data input buffer CTL
D0
D7
O1
O8
A0
A5
Colum decoder
Y0
Y63
Colum gate
A6
A15
Row decoder
X0
X1023
524,288 (512K byte type)
262,144 (256K byte type)
Cell matrix
Vcc
Vpp
GND

■ MC14001BFL 【MOTOROLA】
(Dual 2 Input NOR Gate)


VDD 14
A4 13
B4 12
X4 11
X3 10
B3 9
A3 8
A1 1
B1 2
X1 3
X2 4
B2 5
A2 6
VSS 7

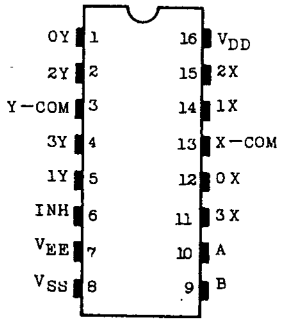
(TOP VIEW)

TRUTH TABLE

A	B	X
L	L	H
L	H	L
H	L	L
H	H	L

$X = \overline{A + B}$

■ MC14052BF 【MOTOROLA】
(Dual 4 Channel Analog Multiplexers/ Demultiplexers)


0Y 1
2Y 2
Y-COM 3
3Y 4
1Y 5
INH 6
VEE 7
VSS 8
16 VDD
15 2X
14 1X
13 X-COM
12 0X
11 3X
10 A
9 B

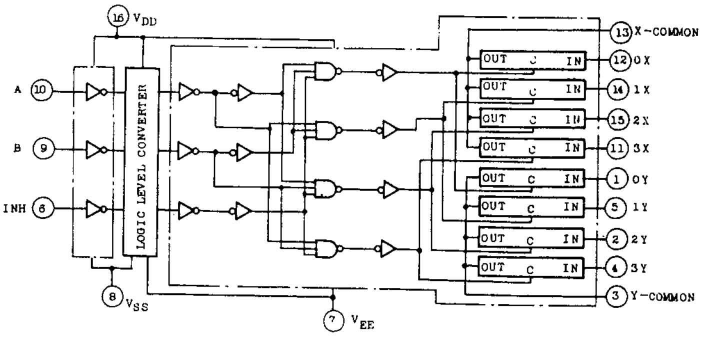
(TOP VIEW)

TRUTH TABLE

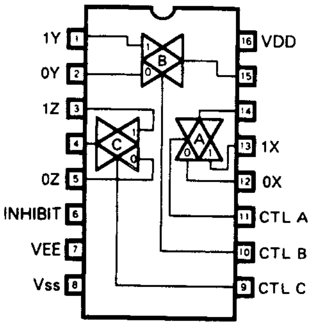
CONTROL INPUTS			"ON" CHANNEL
INHIBIT	B	A	TC4052BP TC4052BF
L	L	L	0X、0Y
L	L	H	1X、1Y
L	H	L	2X、2Y
L	H	H	3X、3Y
L	L	L	—
L	L	H	—
L	H	L	—
L	H	H	—
H	※	※	NONE

※ Don't Care

LOGIC DIAGRAM


16 VDD
A 10
B 9
INH 6
LOGIC LEVEL CONVERTER
8 VSS
7 VEE
OUT
IN
13 X-COMMON
12 0X
14 1X
15 2X
11 3X
1 0Y
5 1Y
2 2Y
4 3Y
3 Y-COMMON

■ MC14053BF 【MOTOROLA】
(Triple 2 Channel Analog Multiplexers/ Demultiplexers)


1Y 1
0Y 2
1Z 3
4
0Z 5
INHIBIT 6
VEE 7
Vss 8
16 VDD
15
14
13 1X
12 0X
11 CTL A
10 CTL B
9 CTL C
B
C
A
1
0

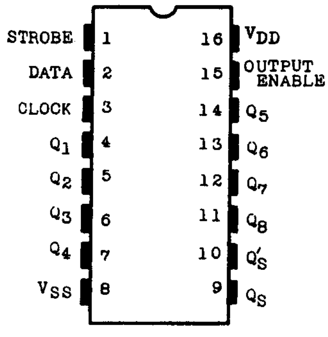
(TOP VIEW)

TRUTH TABLE

CONTROL INPUTS				"ON" CHANNEL
INHIBIT	C	B	A	4053BP 4053BF
L	L	L	L	0X, 0Y, 0Z
L	L	L	H	1X, 0Y,0Z
L	L	H	L	0X, 1Y, 0Z
L	L	H	H	1X, 1Y, 0Z
L	H	L	L	0X, 0Y, 1Z
L	H	L	H	1X, 0Y, 1Z
L	H	H	L	0X, 1Y, 1Z
L	H	H	H	1X, 1Y, 1Z
H	*	*	*	NOTE

* Don't Care,

■ MC14094BF 【MOTOROLA】
(8 Stage Bus Compatible Shift/Store Register)


STROBE 1
DATA 2
CLOCK 3
Q1 4
Q2 5
Q3 6
Q4 7
VSS 8
16 VDD
15 OUTPUT ENABLE
14 Q5
13 Q6
12 Q7
11 Q8
10 Q's
9 Qs

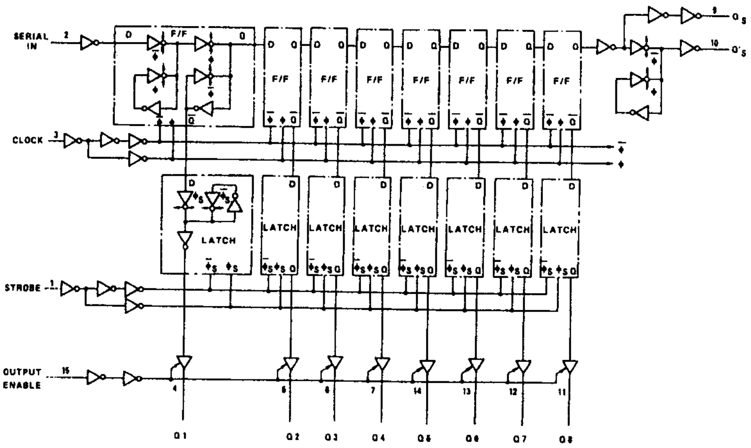
(TOP VIEW)

TRUTH TABLE

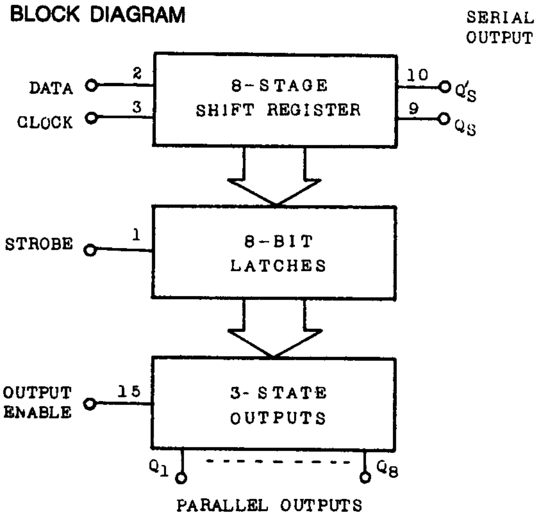
CL	OE	ST	D	PO		SO	
				Q_1	Q_n	Q_S	Q'_S
↑	H	H	L	L	Q_{n-1}	Q_7	NC
↑	H	H	H	H	Q_{n-1}	Q_7	NC
↑	H	L	✱	NC	NC	Q_7	NC
↑	L	✱	✱	HZ	HZ	Q_7	NC
↓	H	✱	✱	NC	NC	NC	Q_S
↓	L	✱	✱	HZ	HZ	NC	Q_S

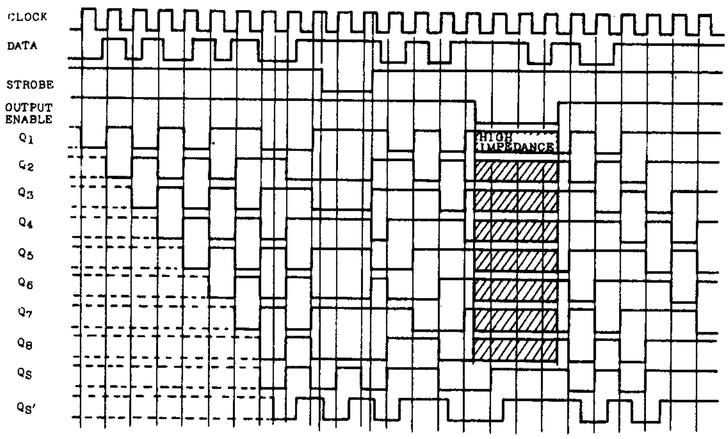
CL = Clock
OE = Output Enable
ST = Strobe
D = Data
PO = Parallel Outputs
SO = Serial Output

✱ = Don't care
NC = No Change
HZ = High Impedance


SERIAL IN 2
D
F/F
Q
CLOCK 3
LATCH
STROBE 1
OUTPUT ENABLE 15
4
5
6
7
14
13
12
11
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
9 Qs
10 Q's

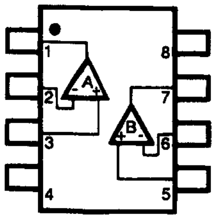
BLOCK DIAGRAM


SERIAL OUTPUT
DATA 2
CLOCK 3
8-STAGE SHIFT REGISTER
10 Q's
9 Qs
STROBE 1
8-BIT LATCHES
OUTPUT ENABLE 15
3-STATE OUTPUTS
Q1
Q8
PARALLEL OUTPUTS



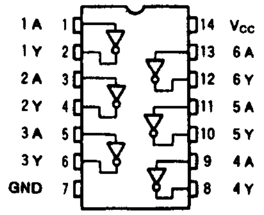
■ MC14577CF 【MOTOROLA】
(Dual Op.Amp)

(Top View)


1
2
3
4
5
6
7
8
A
B

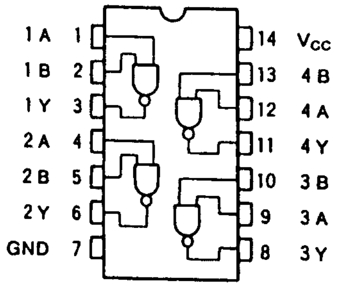
Pin
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. GROUND
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

■ MC74HC04AF 【MOTOROLA】
(Hex Inverters)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

(TOP VIEW)

■ MC74HC00AF 【MOTOROLA】
(Quad 2-Input NAND Gates)

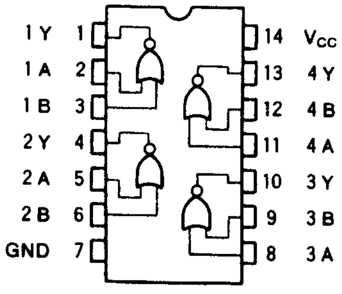

1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
GND 7
14 Vcc
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

(TOP VIEW)

TRUE Table

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

■ MC74HC02AF 【MOTOROLA】
(Quad 2-Input NOR Gates)


1Y 1
1A 2
1B 3
2Y 4
2A 5
2B 6
GND 7
14 Vcc
13 4Y
12 4B
11 4A
10 3Y
9 3B
8 3A

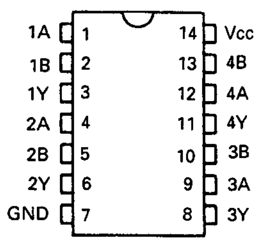
(TOP VIEW)

TRUE Table

A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

■ MC74HC08AF 【MOTOROLA】
(Quad 2-Input AND Gates)

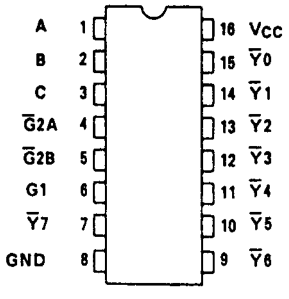
(TOP VIEW)


1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
GND 7
14 Vcc
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

TRUE Table

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ MC74HC138AF 【MOTOROLA】
(3-Line to 8-Line Decoders/Demultiplexers)


A 1
B 2
C 3
$\overline{G}$2A 4
$\overline{G}$2B 5
G1 6
$\overline{Y}$7 7
GND 8
16 Vcc
15 $\overline{Y}$0
14 $\overline{Y}$1
13 $\overline{Y}$2
12 $\overline{Y}$3
11 $\overline{Y}$4
10 $\overline{Y}$5
9 $\overline{Y}$6

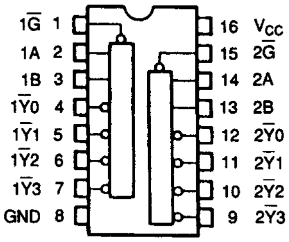
(TOP VIEW)

TRUE Table

INPUTS						OUTPUTS								SELECTED OUTPUT
ENABLE			SELECT											
G1	$\overline{G}$2A	$\overline{G}$2B	C	B	A	$\overline{Y}$0	$\overline{Y}$1	$\overline{Y}$2	$\overline{Y}$3	$\overline{Y}$4	$\overline{Y}$5	$\overline{Y}$6	$\overline{Y}$7	
L	X	X	X	X	X	H	H	H	H	H	H	H	H	NONE
X	H	X	X	X	X	H	H	H	H	H	H	H	H	NONE
X	X	H	X	X	X	H	H	H	H	H	H	H	H	NONE
H	L	L	L	L	L	L	H	H	H	H	H	H	H	$\overline{Y}$0
H	L	L	L	L	H	H	L	H	H	H	H	H	H	$\overline{Y}$1
H	L	L	L	H	L	H	H	L	H	H	H	H	H	$\overline{Y}$2
H	L	L	L	H	H	H	H	H	L	H	H	H	H	$\overline{Y}$3
H	L	L	H	L	L	H	H	H	H	L	H	H	H	$\overline{Y}$4
H	L	L	H	L	H	H	H	H	H	H	L	H	H	$\overline{Y}$5
H	L	L	H	H	L	H	H	H	H	H	H	L	H	$\overline{Y}$6
H	L	L	H	H	H	H	H	H	H	H	H	H	L	$\overline{Y}$7

X : DONT' CARE

■ MC74HC139AF 【MOTOROLA】
(Dual 2-Line to 4-Lile Decoders/ Demultiplexers)


1$\overline{G}$ 1
1A 2
1B 3
1$\overline{Y}$0 4
1$\overline{Y}$1 5
1$\overline{Y}$2 6
1$\overline{Y}$3 7
GND 8
16 Vcc
15 2$\overline{G}$
14 2A
13 2B
12 2$\overline{Y}$0
11 2$\overline{Y}$1
10 2$\overline{Y}$2
9 2$\overline{Y}$3

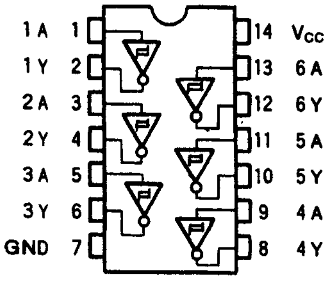
(TOP VIEW)

TRUE Table

INPUTS			OUTPUTS				SELECTED OUTPUT
ENABLE	SELECT		$\overline{Y0}$	$\overline{Y1}$	$\overline{Y2}$	$\overline{Y3}$	
$\overline{G}$	B	A					
H	X	X	H	H	H	H	NONE
L	L	L	L	H	H	H	$\overline{Y0}$
L	L	H	H	L	H	H	$\overline{Y1}$
L	H	L	H	H	L	H	$\overline{Y2}$
L	H	H	H	H	H	L	$\overline{Y3}$

X : Don't care

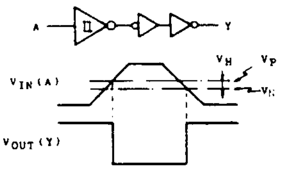
■ MC74HC14AF 【MOTOROLA】
(Hex Schmitt-Trigger Inverters)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

(TOP VIEW)

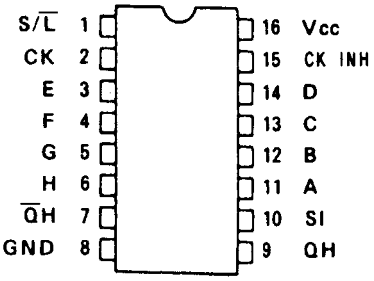
TRUE Table

A	Y
L	H
H	L


A
Y
V_H
V_P
V_IN (A)
V_N
V_OUT (Y)

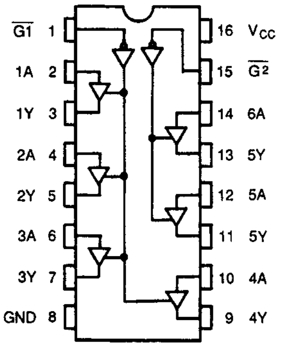
Vcc=4.5 V V_P=2.7 V typ.
V_N=1.6 V typ.

■ MC74HC165F 【MOTOROLA】
(8-Bit Serial or Parallel-In/Serial Out Shift Registers With Complementary Out)


S/$\overline{L}$ 1
CK 2
E 3
F 4
G 5
H 6
$\overline{Q}$H 7
GND 8
16 Vcc
15 CK INH
14 D
13 C
12 B
11 A
10 SI
9 QH

(TOP VIEW)

■ MC74HC367F 【MOTOROLA】
(Hex Bus Drivers With 3-State NON-Inverted Output)


$\overline{G1}$ 1
1A 2
1Y 3
2A 4
2Y 5
3A 6
3Y 7
GND 8
16 Vcc
15 $\overline{G2}$
14 6A
13 5Y
12 5A
11 5Y
10 4A
9 4Y

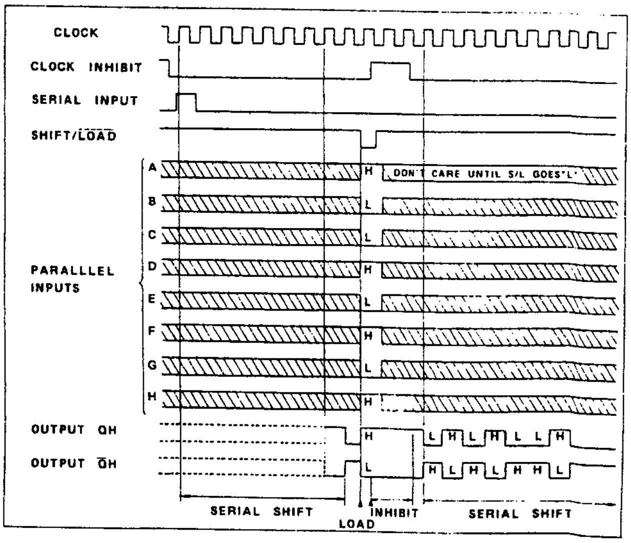
(Top View)

TRUE Table

INPUTS		OUTPUTS	
$\overline{G}$	An	Y(367A)	$\overline{Y}$(368A)
L	L	L	H
L	H	H	L
H	X	Z	Z

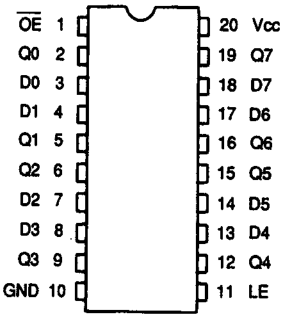
X:DON'T CARE Z:HIGH IMPEDANCE

Timing chart


CLOCK
CLOCK INHIBIT
SERIAL INPUT
SHIFT/$\overline{LOAD}$
PARALLLEL INPUTS
A
B
C
D
E
F
G
H
DON'T CARE UNTIL S/L GOES"L"
OUTPUT QH
OUTPUT $\overline{Q}$H
SERIAL SHIFT
INHIBIT
LOAD
SERIAL SHIFT

■ MC74HC373AF 【MOTOROLA】

(Octal D-Type Latch With NON-Inverted 3-State Output)

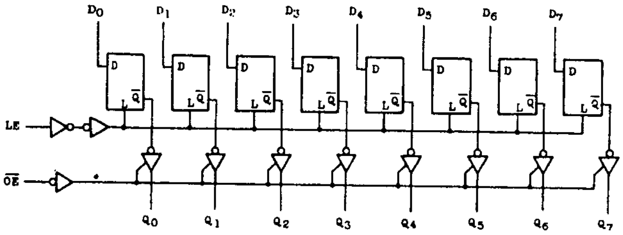

OE 1
Q0 2
D0 3
D1 4
Q1 5
Q2 6
D2 7
D3 8
Q3 9
GND 10
20 Vcc
19 Q7
18 D7
17 D6
16 Q6
15 Q5
14 D5
13 D4
12 Q4
11 LE

(Top View)

TRUE Table

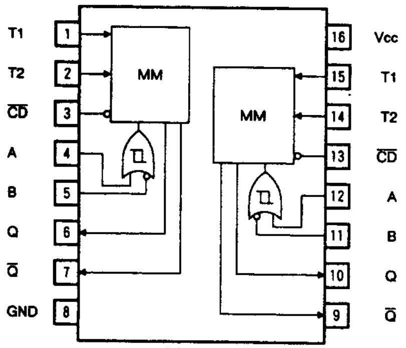
INPUTS			OUTPUTS
$\overline{OE}$	LE	D	
H	X	X	Z
L	L	X	Q_n
L	H	L	L
L	H	H	H

X : Don't Care
Z : Hi impedance
Qn : Q output level before the LE become "L"


D0
D1
D2
D3
D4
D5
D6
D7
D
L Q̄
LE
OE
Q0
Q1
Q2
Q3
Q4
Q5
Q6
Q7

■ MC74HC4538AF 【MOTOROLA】

(Dual Retriggerable Monostable Multivibrator)

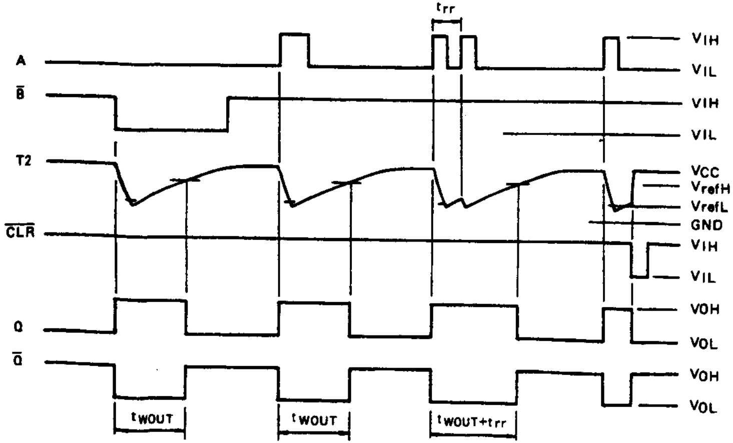

T1 1
T2 2
CD 3
A 4
B 5
Q 6
Q̄ 7
GND 8
16 Vcc
15 T1
14 T2
13 CD
12 A
11 B
10 Q
9 Q̄
MM
MM

TOP VIEW

TRUE Table

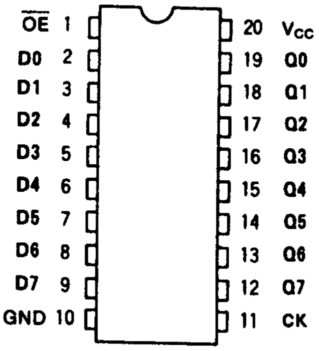
INPUT			OUTPUT		NOTE
A	$\overline{B}$	$\overline{CD}$	Q	$\overline{Q}$	
↑	H	H	⊓	⊔	OUTPUT ENABLE
X	L	H	L	H	INHIBIT
H	X	H	L	H	INHIBIT
L	↓	H	⊓	⊔	OUTPUT ENABLE
X	X	L	L	H	INHIBIT

X:Don't Care



■ MC74HC574AFL 【MOTOROLA】

(Octal D-Type EDGE-Trigger Flip-Flop With NON-Inverted 3-State Outputs)


OE 1
D0 2
D1 3
D2 4
D3 5
D4 6
D5 7
D6 8
D7 9
GND 10
20 Vcc
19 Q0
18 Q1
17 Q2
16 Q3
15 Q4
14 Q5
13 Q6
12 Q7
11 CK

(TOP VIEW)

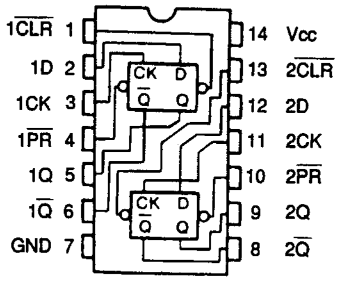
TRUE Table

INPUTS			OUTPUTS	
$\overline{OE}$	CK	D	Q(T574A)	$\overline{Q}$(T564A)
H	X	X	Z	Z
L	↓	X	Q_n	$\overline{Q_n}$
L	↑	L	L	H
L	↑	H	H	L

X : Don't Care
Z : High Impedance
No change

■ MC74HC74AF 【MOTOROLA】

(Dual D-Type Positive-EDGE-Triggered Flip-Flops With Preset AND Clear)


1CLR 1
1D 2
1CK 3
1PR 4
1Q 5
1Q̄ 6
GND 7
14 Vcc
13 2CLR
12 2D
11 2CK
10 2PR
9 2Q
8 2Q̄
CK D
Q̄ Q
CK D
Q̄ Q

(Top View)

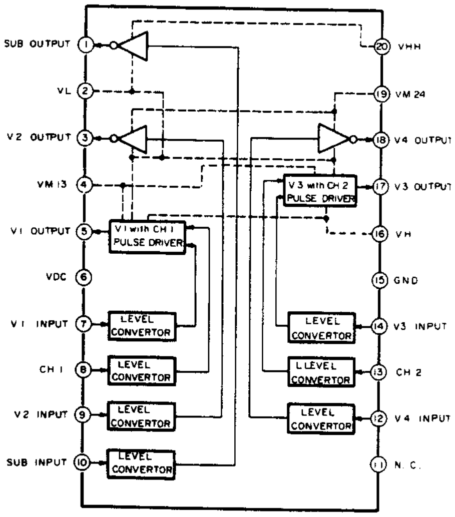
TRUE Table

INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	X	↓	Q_n	$\overline{Q_n}$	NO CHANGE

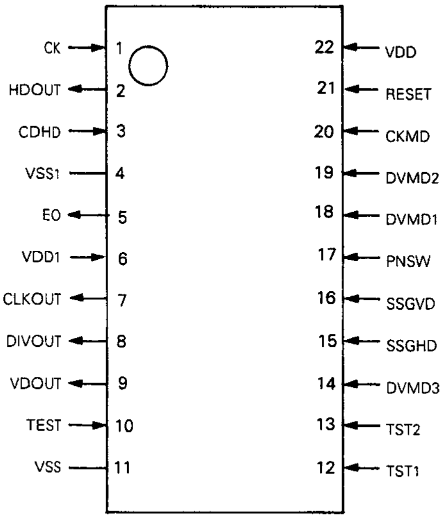
X : Don't care

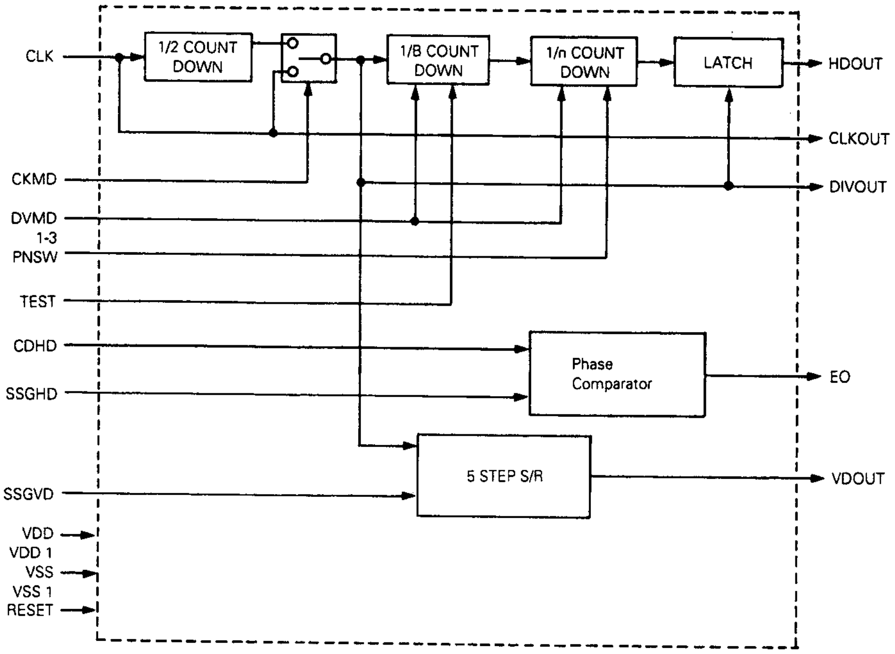
■ MN3112SA 【MATSUSHITA】

(Vertical Driver)


SUB OUTPUT 1
VL 2
V2 OUTPUT 3
VM 13 4
V1 OUTPUT 5
VDC 6
V1 INPUT 7
CH 1 8
V2 INPUT 9
SUB INPUT 10
20 VHH
19 VM 24
18 V4 OUTPUT
17 V3 OUTPUT
16 VH
15 GND
14 V3 INPUT
13 CH 2
12 V4 INPUT
11 N. C.
V1 with CH 1 PULSE DRIVER
V3 with CH 2 PULSE DRIVER
LEVEL CONVERTOR
LEVEL CONVERTOR
LEVEL CONVERTOR
LEVEL CONVERTOR
LEVEL CONVERTOR
L LEVEL CONVERTOR
LEVEL CONVERTOR

■ MN5198 【MATSUSHITA】
(Phase Lock Loop)

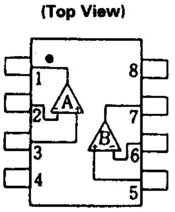

CK 1
HDOUT 2
CDHD 3
VSS1 4
EO 5
VDD1 6
CLKOUT 7
DIVOUT 8
VDOUT 9
TEST 10
VSS 11
22 VDD
21 RESET
20 CKMD
19 DVMD2
18 DVMD1
17 PNSW
16 SSGVD
15 SSGHD
14 DVMD3
13 TST2
12 TST1


CLK
1/2 COUNT DOWN
1/B COUNT DOWN
1/n COUNT DOWN
LATCH
HDOUT
CLKOUT
DIVOUT
CKMD
DVMD
1-3
PNSW
TEST
CDHD
SSGHD
Phase Comparator
EO
5 STEP S/R
VDOUT
SSGVD
VDD
VDD 1
VSS
VSS 1
RESET

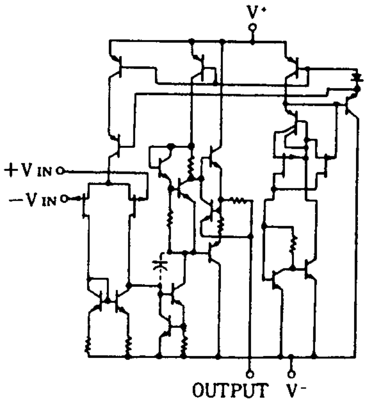
No.	Symbol	I/O	Function
1	CLK	I	CLOCK INPUT
2	HDOUT	O	HD OUTPUT
3	CDHD	I	HD INPUT FROM PLL
4	VSS		GND
5	EO	O	Phase Comparator OUTPUT
6	VDD		+5V
7	CLKOUT	O	CLK OUTPUT
8	DIVOUT	O	fck OUTPUT
9	VDOUT	O	VD OUTPUT
10	TEST	I	TEST
11	VSS		GND
12	TST1	I	TEST 1
13	TST2	I	TEST 2
14	DVMD3	I	CCD SELECT 3
15	SSGHD	I	HD INPUT
16	SSGVD	I	VD INPUT
17	PNSW	I	NTSC: H, PAL: L
18	DVMD1	I	CCD SELECT 1
19	DVMD2	I	CCD SELECT 2
20	CKMD	I	fck: L, 2fck: H
21	RESET	I	RESET
22	VDD		+5V

PIXELS	COUNT DOWN			
	NTSC		PAL	
	B	n	B	n
710H	6	143	6	144
768H	10	91	4	227
830H	7	143	7	144

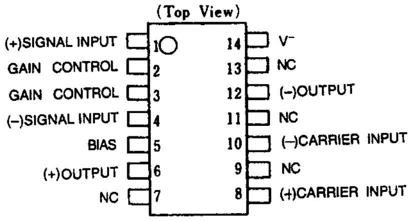
■ NJM062M 【JRC】
(J-FET Input Op.Amp)

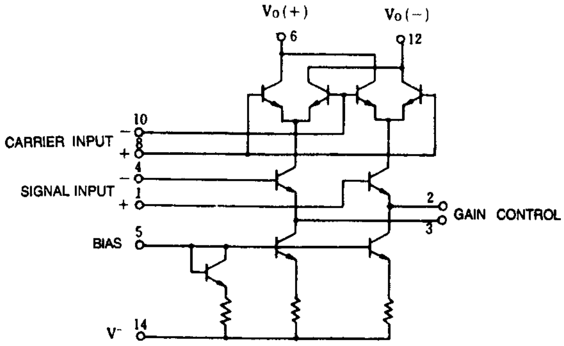

(Top View)
1
2
3
4
8
7
6
5
A
B

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

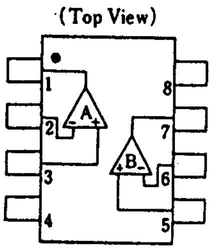

V⁺
+V IN
−V IN
OUTPUT
V⁻

■ NJM1496M 【JRC】
(Balanced Modulator)

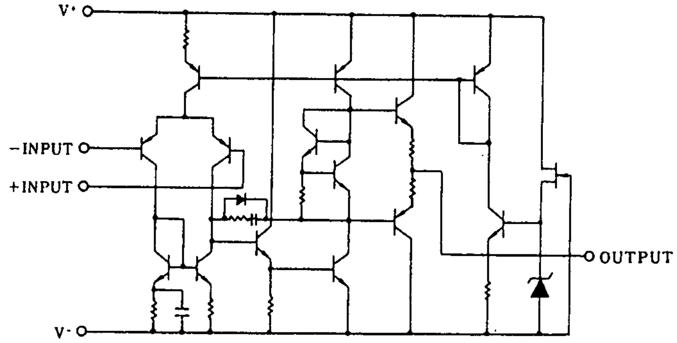

(Top View)
(+)SIGNAL INPUT 1
GAIN CONTROL 2
GAIN CONTROL 3
(−)SIGNAL INPUT 4
BIAS 5
(+)OUTPUT 6
NC 7
14 V⁻
13 NC
12 (−)OUTPUT
11 NC
10 (−)CARRIER INPUT
9 NC
8 (+)CARRIER INPUT


Vo(+)
6
Vo(−)
12
CARRIER INPUT
10
8
SIGNAL INPUT
4
1
2
3
GAIN CONTROL
BIAS
5
V⁻
14

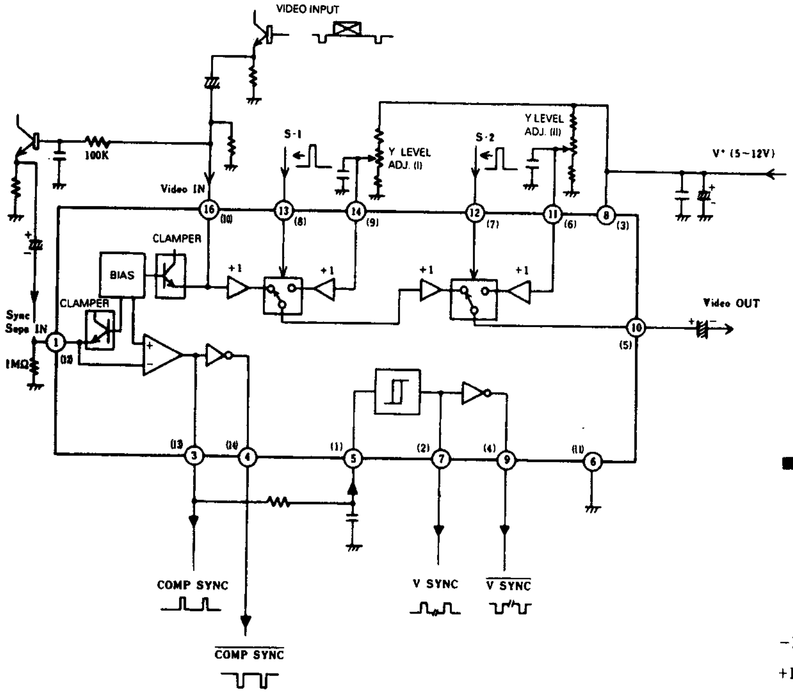
■ NJM2068MD 【JRC】
(Dual Low-Noise Op.Amp)


(Top View)
1
2
3
4
5
6
7
8
A
B

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

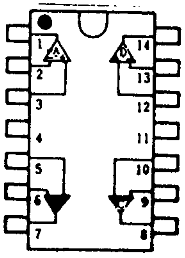

V⁺
−INPUT
+INPUT
OUTPUT
V⁻

■ NJM2207M 【JRC】
(Video Super imposer)


VIDEO INPUT
100K
Video IN
S-1
S-2
Y LEVEL ADJ. (I)
Y LEVEL ADJ. (II)
V⁺ (5~12V)
CLAMPER
BIAS
CLAMPER
Sync Sepa IN
1MΩ
+1
+1
+1
+1
Video OUT
COMP SYNC
V SYNC
V SYNC
COMP SYNC

■ NJM2902M 【JRC】
(Quad Single Supply Op.Amp)

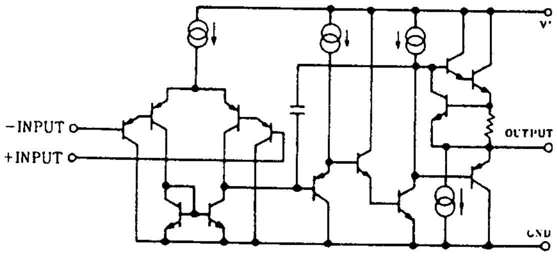
N, M V Type
(Top View)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D

Pin Assignment

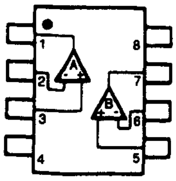
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁺
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. C OUTPUT
9. C−INPUT
10. C+INPUT
11. GROUND
12. D+INPUT
13. D−INPUT
14. D OUTPUT

■ **Equivalent Circuit (4 circuits in a chip)**


V⁺
−INPUT
+INPUT
OUTPUT
GND

■ NJM2904M 【JRC】
(Dual Single Supply Op.Amp)

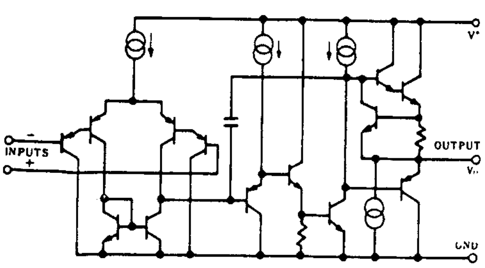
D, M Type
(Top View)


1
2
3
4
5
6
7
8
A
B

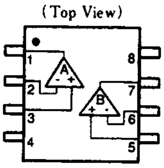
Pin Assignment

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. GND
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

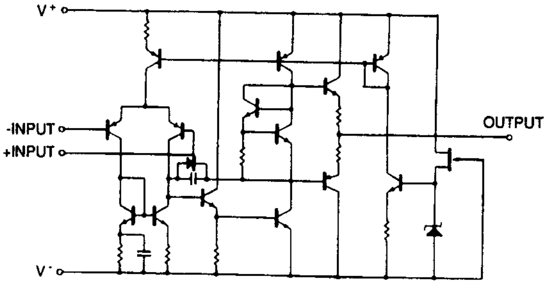
■ **Equivalent Circuit (2 circuits in a chip)**


V⁺
INPUTS
−
+
OUTPUT
V₀
GND

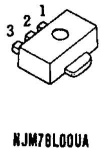
■ NJM4560MD 【JRC】
(Dual Op.Amp)


(Top View)
1
2
3
4
5
6
7
8
A
B

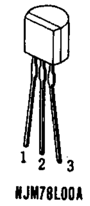
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V

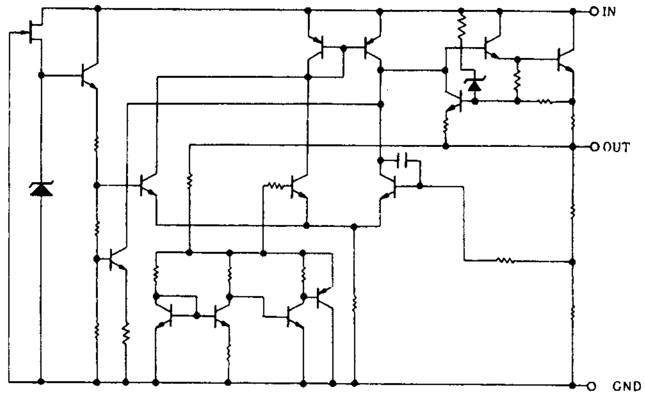

V⁺
-INPUT
+INPUT
OUTPUT
V⁻

■ NJM78L15UA-TE1 【JRC】
(3-Terminal Positive Voltage Regulator (+15V))

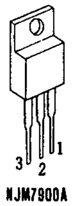

1
2
3
NJM78L00UA

1. OUT
2. GND
3. IN

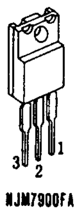

1
2
3
NJM78L00A

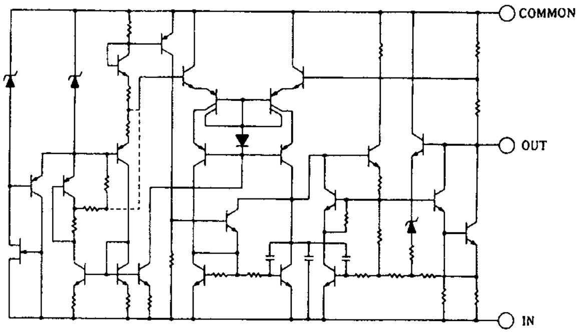


■ NJM79M05FA 【JRC】
(3-Terminal Negative Voltage Regulator (−5V))

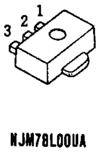

3
2
1
NJM7900A

1. OUT
2. IN
3. COMMON

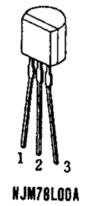

3
2
1
NJM7900FA

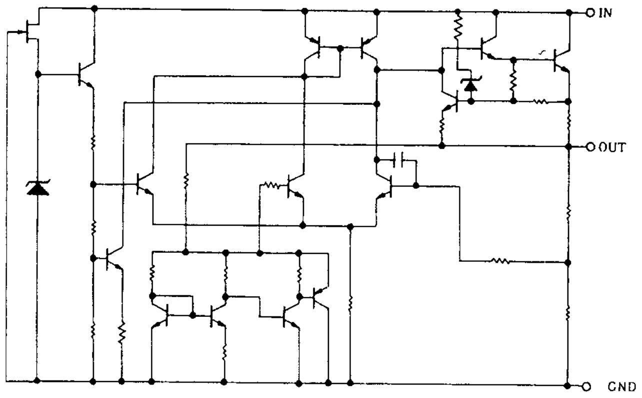

COMMON
OUT
IN

■ RC78L05UA 【RAYTHEON】
(See NJM78L15UA-TE1.)

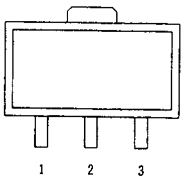

1
2
3
NJM78L00UA

1. OUT
2. GND
3. IN

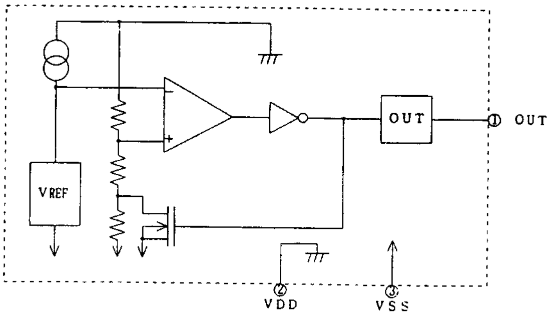

1
2
3
NJM78L00A



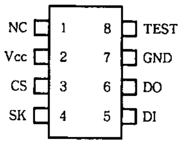
■ S-8054HNCB 【SEIKO INSTRUMENTS】
(C-MOS Voltage Detector)



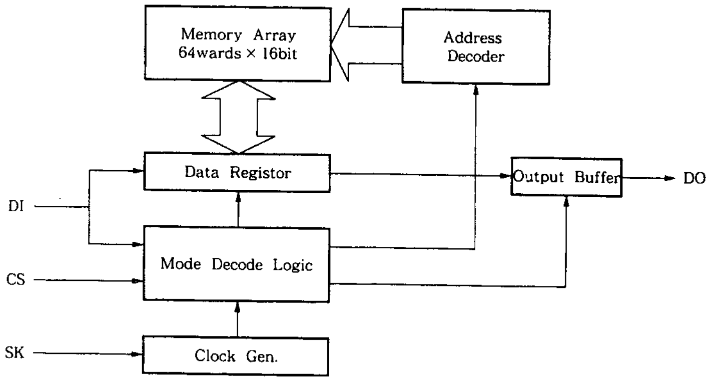
1. OUT
2. VDD
3. VSS


VREF
OUT
① OUT
② VDD
③ VSS

■ S-2914AIF10 【SEIKO】
(1K-Bit Serial EE PROM)

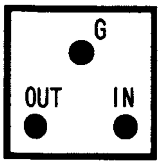

NC 1
Vcc 2
CS 3
SK 4
8 TEST
7 GND
6 DO
5 DI

PIN No.	SIGNAL	PIN No.	SIGNAL
1	No Connect	5	Serial Data Input
2	Vcc (+5V)	6	Serial Data Output
3	Chip Select	7	GND (0V)
4	Serial Clock	8	No Connect


Memory Array
64wards × 16bit
Address
Decoder
Data Registor
Output Buffer
DO
DI
Mode Decode Logic
CS
SK
Clock Gen.

■ SCV2241-001 【JVC】
(+5V DC-DC Convertor)

TOP VIEW

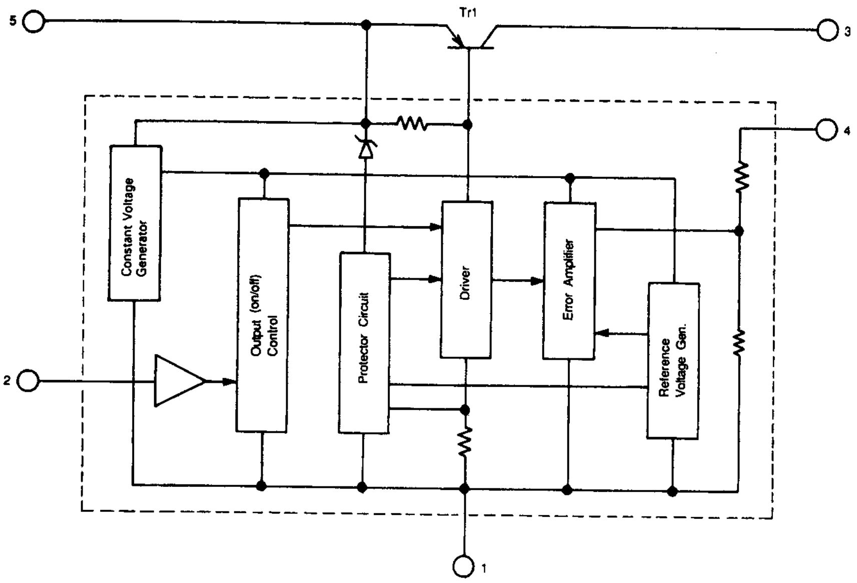


PIN ASSIGNMENT

G	GND
OUT	V OUTPUT
IN	V INPUT

■ SI-3090C 【SANKEN】
(Regulator)

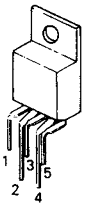
Equivalent Circuit


5
Tr1
3
4
Constant Voltage Generator
Output (on/off) Control
Protector Circuit
Driver
Error Amplifier
Reference Voltage Gen.
2
1

Electrical Characteristics

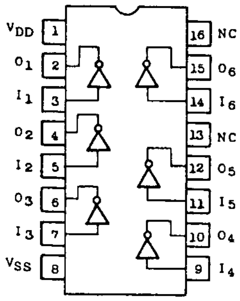
	MIN	TYP	MAX
· Input Voltage	10V		30V
· Output Voltage	8.64V	9.00V	9.36V

· Minimum Difference from Input Voltage to Output Voltage
0.5V (Output Current ≦ 1A)
1:0V (Output Current ≦ 1.5A)



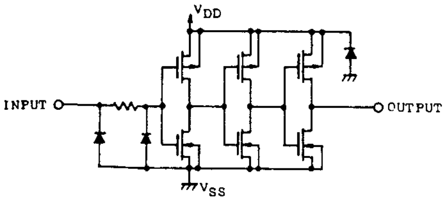
1. GND
2. Vc (on/off)
3. Vo
4. Vo sence
5. Vin

■ TC4049BF 【TOSHIBA】
(Hex Inverting Buffer)


VDD 1
O1 2
I1 3
O2 4
I2 5
O3 6
I3 7
VSS 8
16 NC
15 O6
14 I6
13 NC
12 O5
11 I5
10 O4
9 I4

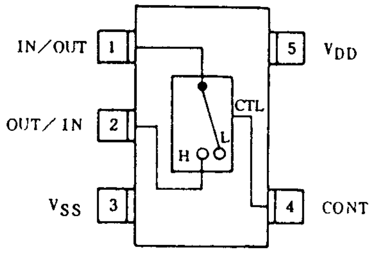
(TOP VIEW)

BLOCK DIAGRAM


VDD
INPUT
OUTPUT
VSS

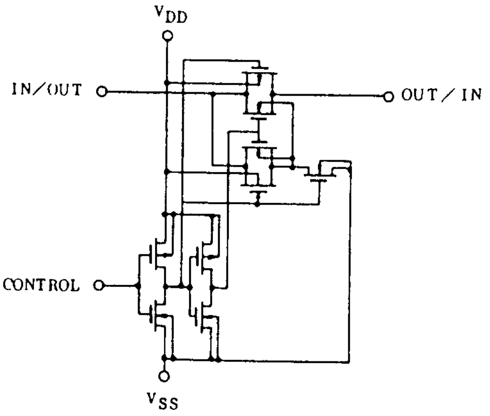
■ TC4S66F 【TOSHIBA】
(Bilateral Switch)

(TOP VIEW)

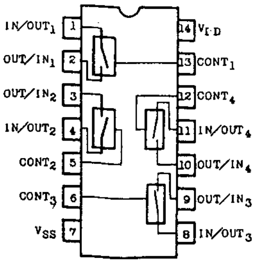

IN/OUT 1
OUT/IN 2
VSS 3
5 VDD
4 CONT
CTL
H
L

CONTROL	IMPEDANCE BETWEEN IN/OUT-OUT/IN ※
H	0.5 ～ 5 × 10^2 Ω
L	> 10^9 Ω

※ See Electrical Characteristics


VDD
IN/OUT
OUT/IN
CONTROL
VSS

■ TC4066BF 【TOSHIBA】
(Quad Bilateral Switch)

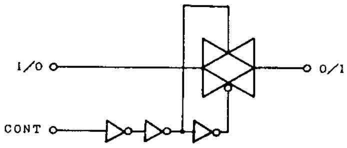

IN/OUT1 1
OUT/IN1 2
OUT/IN2 3
IN/OUT2 4
CONT2 5
CONT3 6
VSS 7
14 VDD
13 CONT1
12 CONT4
11 IN/OUT4
10 OUT/IN4
9 OUT/IN3
8 IN/OUT3

(TOP VIEW)

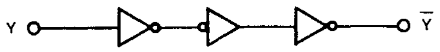
TRUTH TABLE

CONTROL	Impedance Between IN/OUT-OUT/IN ※
H	0.5～5×10^2Ω
L	>10^9Ω

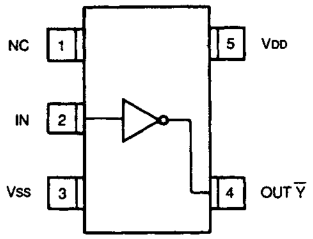
LOGIC DIAGRAM



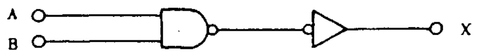
■ TC4S69F 【TOSHIBA】
(Inverter Gate)


Y
$\overline{Y}$

(Top View)

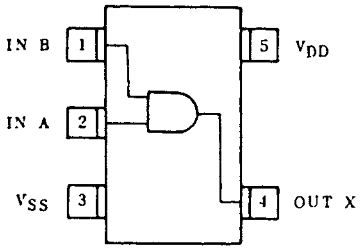

NC 1
IN 2
Vss 3
5 VDD
4 OUT $\overline{Y}$

■ TC4S81F 【TOSHIBA】
(2–Input AND Gate)

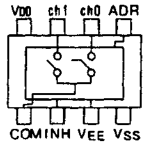


$X = A \cdot B$

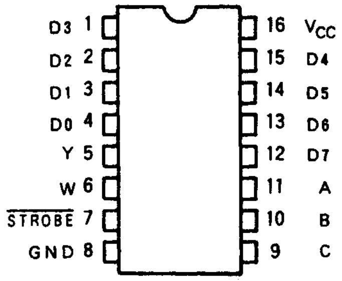
(TOP VIEW)


IN B 1
IN A 2
V_{SS} 3
5 V_{DD}
4 OUT X

■ TC4W53F 【TOSHIBA】
(2–Channel Multiplexer)


VDD
ch1
ch0
ADR
COM
INH
VEE
VSS

■ TC74HC251AF 【TOSHIBA】
(8–Channel 3–State Multiplexer)


D3 1
D2 2
D1 3
D0 4
Y 5
W 6
$\overline{\text{STROBE}}$ 7
GND 8
16 V_{CC}
15 D4
14 D5
13 D6
12 D7
11 A
10 B
9 C

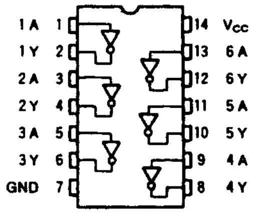
(TOP VIEW)

TRUE Table

INPUTS				OUTPUTS			
SELECT			$\overline{\text{STROBE}}$	AC151		AC251	
C	B	A		Y	W	Y	W
X	X	X	H	L	H	Z	Z
L	L	L	L	D0	$\overline{D0}$	D0	$\overline{D0}$
L	L	H	L	D1	$\overline{D1}$	D1	$\overline{D1}$
L	H	L	L	D2	$\overline{D2}$	D2	$\overline{D2}$
L	H	H	L	D3	$\overline{D3}$	D3	$\overline{D3}$
H	L	L	L	D4	$\overline{D4}$	D4	$\overline{D4}$
H	L	H	L	D5	$\overline{D5}$	D5	$\overline{D5}$
H	H	L	L	D6	$\overline{D6}$	D6	$\overline{D6}$
H	H	H	L	D7	$\overline{D7}$	D7	$\overline{D7}$

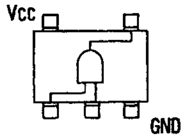
Z:High Impedance
X:Don't care

■ TC74HCU04AF 【TOSHIBA】
(See MC74HC04AF.)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

(TOP VIEW)

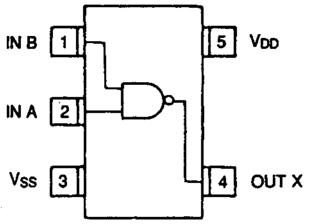
■ TC7S08F 【TOSHIBA】
(2 Input Single AND Gate)

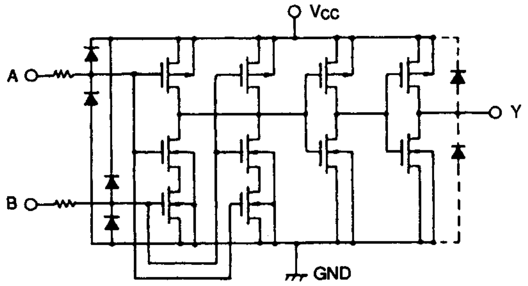


TRUE Table

A	B	X
L	L	L
L	H	L
H	L	L
H	H	H

■ TC7S00F 【TOSHIBA】
(2–Input NAND Gate)


IN B 1
IN A 2
Vss 3
5 VDD
4 OUT X

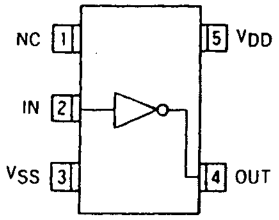


TRUE Table

A	B	X
L	L	H
L	H	H
H	L	H
H	H	L

■ TC7SU04F 【TOSHIBA】
(Invertor)

Pin arangement

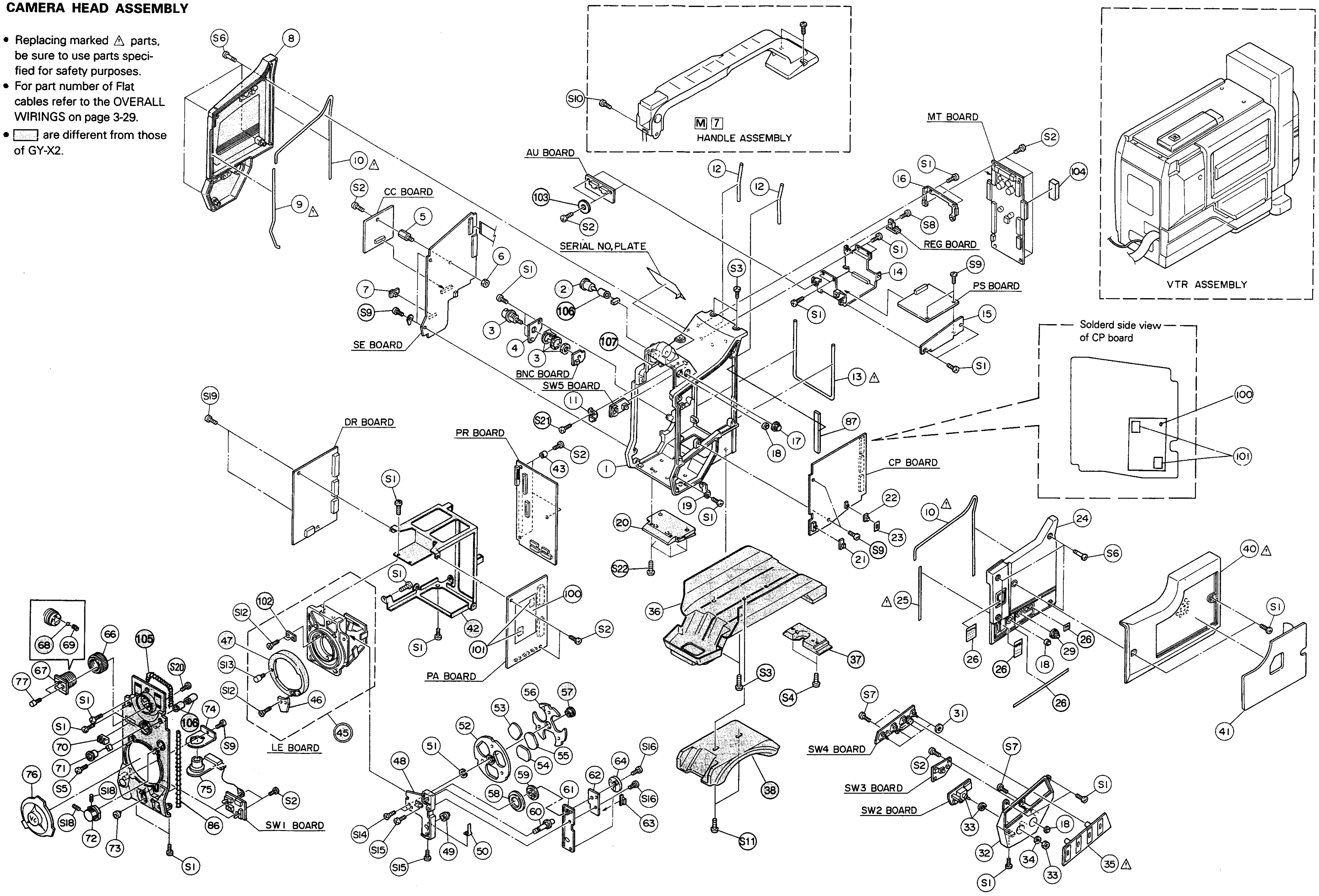

NC 1
IN 2
VSS 3
5 VDD
4 OUT

3-71

SECTION 4
EXPLODED VIEWS AND PARTS LIST

4.1 CAMERA HEAD ASSEMBLY

Note:
- Replacing marked ⚠ parts, be sure to use parts specified for safety purposes.
- For part number of Flat cables refer to the OVERALL WIRINGS on page 3-29.
- ▭ are different from those of GY-X2.



M 7
HANDLE ASSEMBLY
VTR ASSEMBLY
AU BOARD
CC BOARD
SERIAL NO. PLATE
MT BOARD
REG BOARD
PS BOARD
SE BOARD
BNC BOARD
SW5 BOARD
DR BOARD
PR BOARD
CP BOARD
Solderd side view of CP board
LE BOARD
PA BOARD
SW1 BOARD
SW4 BOARD
SW3 BOARD
SW2 BOARD
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S18
S19
S20
S21
S22
1
2
3
4
5
6
7
8
9 ⚠
10 ⚠
11
12
13 ⚠
14
15
16
17
18
19
20
21
22
23
24
25 ⚠
26
29
31
32
33
34
35 ⚠
36
37
38
40 ⚠
41
42
43
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
66
67
68
69
70
71
72
73
74
75
76
77
86
87
100
101
102
103
104
105
106
107

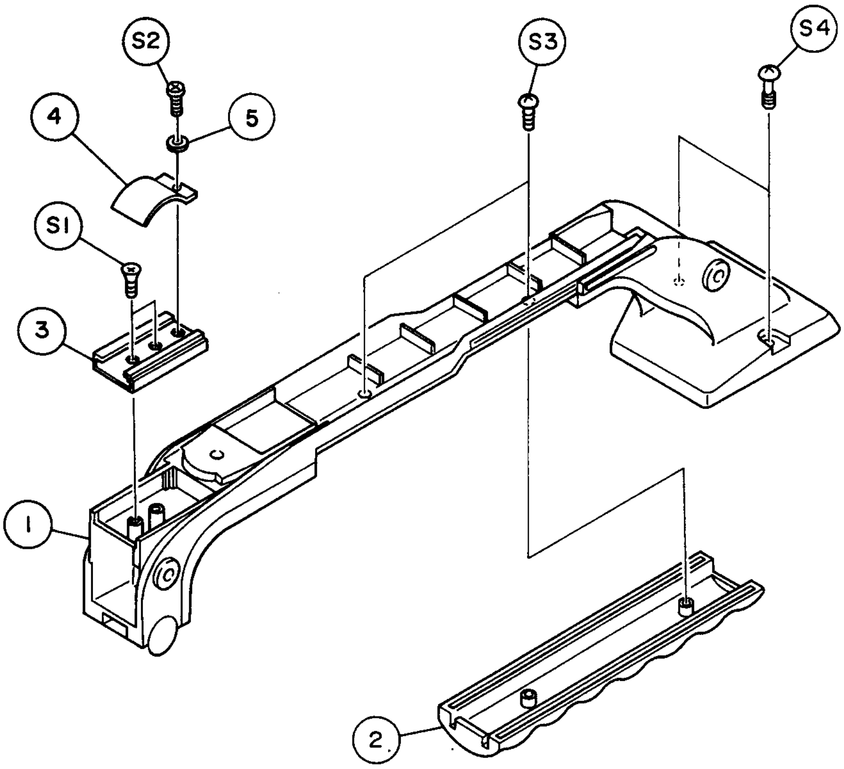
● MK Board assembly list M 1

M 1 M M ☐ ☐ ☐ ☐

Symbol No.	Part No.	Part Name	Description
1	SC10159-003	CH FRAME	
2	SCV0238-06S	CONNECTOR	
3	SCV0749-001	BNC CONNECTOR	
4	SC45240-001	BNC BRACKET	
5	SC45260-001	STUD	
6	NNS3000N	NUT	
7	SC43403-001	KNOB	
8	SC10163-032	SIDE COVER (L)	
⚠ 9	SC44847-150	SHIELD PACKING	
⚠ 10	SC44847-260	SHIELD PACKING	
11	SC43407-001	BRACKET	
⚠ 12	SC44847-050	SHIELD TUBE	
⚠ 13	SC44847-240	SHIELD TUBE	
14	SC31656-001	RAIL BRACKET	
15	SC45238-002	ESCUTCHEON	
16	SC45236-001	BRACKET	
17	SC43406-001	SWITCH CAP	
18	SC44828-002	SWITCH CAP	
19	SC45237-001	BRACKET	
20	SC20479-002	FRONT BASE	
21	SC45244-001	SLIDE KNOB	(Long)
22	SC45245-001	SLIDE KNOB	(Short)
23	SC45266-002	LABEL	
24	SC10164-001	SIDE COVER(R)	
⚠ 25	SC44847-050	SHIELD TUBE	
26	SC31916-001	LABEL	4 Piece of 1 Set
29	SC45246-001	KNOB	SHUTTER
31	SC45264-001	RUBBER	SWITCH
32	SC20498-001	SWITCH PANEL	
33	REFER TO THE SECTION 5 “SW2 Board Assembly”	SWITCH	POWER SWITCH
34	Q03091-202	WASHER	
⚠ 35	SC31660-001	SWITCH PLATE	
36	SC10189-001	BOTTOM FRAME	
37	SC31335-011	REAR BASE	
38	SC10190-001	SHOLDER PAD	
⚠ 40	SC10165-001	CHEEK PAD	
⚠ 41	SC45249-001	SHEET	
42	SC20497-002	BASE BRACKET	
43	SS49917-010	SPACER	
44	SC45257-001	SHIELD PLATE	
45	SCM0835	OPTICAL BLOCK ASS'Y	
46	SC43855-001	LEVER	
47	SC31305-003	MOUNT RING	
48	SC31307-001	FILTER BASE	
49	SC44482-002	STOPPER	
50	SC44511-002	F.SPRING	
51	Q03093-841	WASHER	
52	SC31301-001	FILTER WHEEL	
53	SC43840-001	FILTER	CLEAR
54	SC43841-001	FILTER	ORANGE
55	SC43842-003	FILTER	BROWN
56	SC44488-001	SHEET	
57	SC45539-001	F.W.SHAFT	
58	SC44485-001	GEAR	
59	SC44491-001	SHAFT	

Symbol No.	Part No.	Part Name	Description
60	SC44486-001	SHAFT	
61	SC31306-002	COVER	
62	SC84505-002	FL BOARD	
63	SCV1766-006	CONNECTOR	
64	SC44676-005	FILTER CAP ASS'Y	
65	SC10160-002	FRONT FRAME	
66	SC45127-002	VF RING	
67	SC31861-001	VF BASE	
68	SC40465-040	STEEL BALL	
69	SC45107-001	SPRING	
70	SC42550-011	CABLE CLAMPER	
71	SCV0238-06S	VF CONNECTOR	Necessary to be attached the capacitor, refer to the “OVERALL WIRING”
72	SC31323-003	FILTER KNOB	
73	SC44828-011	KNOB	
74	SC45239-003	LENS BRAKET	
75	REFER TO THE SECTION 5 “LE Board Assembly”	LENS CONNECTOR	
76	SC43825-002	CAP	
77	BYS4025M	BOLT	
⚠ 86	SC44847-170	SHIELD TUBE	
87	SC44963-031	SHEET	
⚠ 100	SC44826-001	SHIELD PLATE	
⚠ 101	SSV1568-205	SPACER	
102	SC44492-001	LENS PLATE	
103	Q03093-115	PLASTIC WASHER	
104	PRD30030-76	PAD	
⚠ 105	SC44847-110	SHIELD TIBE	
106	SCV2631-001	FERRITE CORE	
107	SCV0518-009	LAG PLATE	
S 1	SDSP3006M	SCREW	M3 × 6
S 2	LPSP3006Z	SCREW	M3 × 6
S 3	SDSP4008M	SCREW	M4 × 8
S 4	SDSP3010M	SCREW	M3 × 10
S 6	SDSP3012N	SCREW	M3 × 12
S 7	SDSF3006M	SCREW	M3 × 6
S 8	LPSP3008Z	SCREW	M3 × 8
S 9	LPSP3004Z	SCREW	M3 × 4
S10	SDSP5020M	SCREW	M5 × 20
S11	DPSP4006M	SCREW	M4 × 6
S12	SSSP2604M	SCREW	M2.6 × 4
S13	SC40779-003	SCREW	
S14	SSSK2040M	SCREW	M2 × 4.0
S15	SPSK2025M	SCREW	M2 × 2.5
S16	SPSK2050M	SCREW	M2 × 5.0
S18	YRS2603M	SCREW	M2.6 × 3
S19	DPSP3006Z	SCREW	M3 × 6
S20	SDSF2005M	SCREW	M2 × 5
S21	SDSP3004M	SCREW	M3 × 4
S22	SDSP3025M	SCREW	M3 × 25

4.2 HANDLE ASSEMBLY



- **HANDLE Assembly list** M7

M7MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
1	SC10162-011	HANDLE	
2	SC31516-001	COVER	
3	SC40886-001	SHOE	
4	C40936	SPRING	
5	WLS2000N	WASHER	
S1	SPSP2004N	SCREW	M3×6
S2	SC44821-001	SCREW	
S3	SDSF2606M	SCREW	M2.6×6
S4	SDSP4010M	SCREW	M4×10

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION:
Parts identified by the ⚠ symbol are critical for safety. Replace only with specified parts numbers.
For maximum reliability and performance, all other replacement parts should be identical to those specified.

NOTE:

- Parts not denoted by parts numbers are not supplied by JVC.
- Abbreviations in this list are as follows:

RESISTORS

In the "Description" column:

All resistance values are in ohms (Ω).
K expresses kilo-ohm (1 000 ohms, kΩ).
M expresses mega-ohm (10^6 ohms, MΩ).

In the "Parts Name" column:

COMP. RESISTOR	:	Composition Resistor
U.F. RESISTOR	:	Non-inflammable Resistor
O.M.F. RESISTOR	:	Oxide Metalized Film Resistor
FUSI. RESISTOR	:	Fusible Resistor
M.P. RESISTOR	:	Metal Plate Resistor
M.G. RESISTOR	:	Metal Graze Resistor
M.F. RESISTOR	:	Metal Film Resistor
W.W. RESISTOR	:	Wire Wound Resistor

CAPACITORS

In the "Description" column:

All capacitance values are in microfarad (μF) unless otherwise indicated.
P expresses picofarad (10^{-12} farad, pF).

In the "Parts Name" column:

TRIM. CAPACITOR	:	Trimmer Capacitor
CER. CAPACITOR	:	Ceramic Capacitor
E. CAPACITOR	:	Electrolytic Capacitor
TAN. CAPACITOR	:	Tantalum Capacitor
MPP CAPACITOR	:	Metalized Polypropylene Capacitor
O.F. CAPACITOR	:	Oil Film Capacitor
MPF CAPACITOR	:	Metalized Polyfilm Capacitor
F.M. CAPACITOR	:	Film Mica Capacitor
P.P. CAPACITOR	:	Polypropylene Capacitor
P.S. CAPACITOR	:	Polystyrene Capacitor

Note: In the "Description" column of the parts list, (U) means the parts for the U version while (E) is for the E Version.

Symbol No.	Part No.	Part Name	Description	
IC1	SCV1585-064	I.C.(M)	JVC (U)	← **for U version**
	SCV1585-067	I.C.(M)	JVC (E)	← **for E version**

5.1 N.DR [NTSC] board assembly list 5 1 N
SCK2423-03-N0A for U version 5 1 N ☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	CXD1265R	I.C.(M)	SONY
IC2	MN5198	I.C.(M)	MATSUSHITA
IC3	NJM78L15UA-TE1	I.C.(M)	JRC
IC5	TC74HC251AF	I.C.(M)	TOSHIBA
IC6	MC74HC74AF	I.C.(M)	MOTOROLA
IC7	MC74HC08AF	I.C.(M)	MOTOROLA
IC8	MC74HC14AF	I.C.(M)	MOTOROLA
IC9	MC74HC02AF	I.C.(M)	MOTOROLA
IC10	MC74HC00AF	I.C.(M)	MOTOROLA
IC11	TC7SU04F	I.C.(M)	TOSHIBA
IC12	TC74HCU04AF	I.C.(M)	TOSHIBA
IC101	MC74HC04AF	I.C.(M)	MOTOROLA
IC102	MN3112SA	I.C.(M)	MATSUSHITA
IC201	MC74HC04AF	I.C.(M)	MOTOROLA
IC202	MN3112SA	I.C.(M)	MATSUSHITA
IC301	MC74HC04AF	I.C.(M)	MOTOROLA
IC302	MN3112SA	I.C.(M)	MATSUSHITA
Q1	2SB1219(QR)	TRANSISTOR	MATSUSHITA
Q101	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q102	2SA1462Y3Y4	TRANSISTOR	NEC
Q103	2SC3735(45)	TRANSISTOR	NEC
Q201	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q202	2SA1462Y3Y4	TRANSISTOR	NEC
Q203	2SC3735(45)	TRANSISTOR	NEC
Q301	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q302	2SA1462Y3Y4	TRANSISTOR	NEC
Q303	2SC3735(45)	TRANSISTOR	NEC
D1	MA335	DIODE	MATSUSHITA
D2	MA335	DIODE	MATSUSHITA
D3	MA142A	DIODE	MATSUSHITA
D4	MA142A	DIODE	MATSUSHITA
D101	MA742	DIODE	MATSUSHITA
D102	MA742	DIODE	MATSUSHITA
D103	MA142A	DIODE	MATSUSHITA
D201	MA742	DIODE	MATSUSHITA
D202	MA742	DIODE	MATSUSHITA
D203	MA142A	DIODE	MATSUSHITA
D301	MA742	DIODE	MATSUSHITA
D302	MA742	DIODE	MATSUSHITA
D303	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-151	M.G.RESISTOR	150 1/10W
R2	NRSA02J-561	M.G.RESISTOR	560 1/10W
R3	NRSA02J-220	M.G.RESISTOR	22 1/10W
R4	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R5	NRSA02J-561	M.G.RESISTOR	560 1/10W
R6	NRSA02J-220	M.G.RESISTOR	22 1/10W
R7	NRSA02J-220	M.G.RESISTOR	22 1/10W
R8	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R9	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R10	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R12	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R13	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R14	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R15	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R17	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R18	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R19	NRSA02J-471	M.G.RESISTOR	470 1/10W
R20	NRSA02J-471	M.G.RESISTOR	470 1/10W
R21	NRSA02J-151	M.G.RESISTOR	150 1/10W
R22	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R23	NRSA02J-271	M.G.RESISTOR	270 1/10W
R24	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R25	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R26	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R27	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R29	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R30	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R31	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R32	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R33	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R34	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R36	NRSA02J-681	M.G.RESISTOR	680 1/10W
R37	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R38	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R40	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R41	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R42	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R45	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R46	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R101	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R102	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R103	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R104	NRSA02J-100	M.G.RESISTOR	10 1/10W
R105	NRSA02J-100	M.G.RESISTOR	10 1/10W
R106	NRSA02J-100	M.G.RESISTOR	10 1/10W
R107	NRSA02J-100	M.G.RESISTOR	10 1/10W
R108	NRSA02J-821	M.G.RESISTOR	820 1/10W
R201	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R202	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R203	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R204	NRSA02J-100	M.G.RESISTOR	10 1/10W
R205	NRSA02J-100	M.G.RESISTOR	10 1/10W
R206	NRSA02J-100	M.G.RESISTOR	10 1/10W
R207	NRSA02J-100	M.G.RESISTOR	10 1/10W
R208	NRSA02J-821	M.G.RESISTOR	820 1/10W
R301	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R302	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R303	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R304	NRSA02J-100	M.G.RESISTOR	10 1/10W
R305	NRSA02J-100	M.G.RESISTOR	10 1/10W
R306	NRSA02J-100	M.G.RESISTOR	10 1/10W
R307	NRSA02J-100	M.G.RESISTOR	10 1/10W
R308	NRSA02J-821	M.G.RESISTOR	820 1/10W
VR1	NVP1415-102	TRIM.RESISTOR	1K HP
VR2	NVP1415-501	TRIM.RESISTOR	500 SHP
VR3	NVP1415-501	TRIM.RESISTOR	500 CP
VR4	NVP1415-203	TRIM.RESISTOR	20K Eoo
VR101	NVP1415-203	TRIM.RESISTOR	20K B Vsub
VR201	NVP1415-203	TRIM.RESISTOR	20K G Vsub
VR301	NVP1415-203	TRIM.RESISTOR	20K R Vsub
C1	NEA11EM-106	E.CAPACITOR	10 25V
C2	NEA11AM-336	E.CAPACITOR	33 10V
C4	NCB21EK-473	CER.CAPACITOR	0.047 25V

[N. DR]

Symbol No.	Part No.	Part Name	Description	
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NEA11EM-106	E.CAPACITOR	10	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEA11CM-476	E.CAPACITOR	47	16V
C10	NCT03CH-100	CER.CAPACITOR	10P	50V
C11	NCT03CH-100	CER.CAPACITOR	10P	50V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCT03CH-100	CER.CAPACITOR	10P	50V
C14	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C15	NCT03CH-100	CER.CAPACITOR	10P	50V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCT03CH-100	CER.CAPACITOR	10P	50V
C18	NCB21EK-473	CER.CAPACITOR	0.047	25V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NEA11AM-336	E.CAPACITOR	33	10V
C24	NEF11AM-156	TAN.CAPACITOR	15	10V
C25	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NEF11AM-156	TAN.CAPACITOR	15	10V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCB21HK-103	CER.CAPACITOR	0.010	50V
C30	NCT03CH-101	CER.CAPACITOR	100P	50V
C31	NCT03CH-101	CER.CAPACITOR	100P	50V
C32	NCB21EK-473	CER.CAPACITOR	0.047	25V
C34	NCB21EK-473	CER.CAPACITOR	0.047	25V
C35	NCT03CH-680	CER.CAPACITOR	68P	50V
C36	NCB21EK-473	CER.CAPACITOR	0.047	25V
C38	NEA11CM-476	E.CAPACITOR	47	16V
C39	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C40	NEA11AM-336	E.CAPACITOR	33	10V
C41	NCB21EK-473	CER.CAPACITOR	0.047	25V
C42	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C43	NEF11AM-156	TAN.CAPACITOR	15	10V
C44	NEA10JM-337	E.CAPACITOR	330	6.3V
C45	NEA10JM-337	E.CAPACITOR	330	6.3V
C47	NCT03CH-221	CER.CAPACITOR	220P	50V
C48	NCT03CH-221	CER.CAPACITOR	220P	50V
C49	NCT03CH-151	CER.CAPACITOR	150P	50V
C50	NCT03CH-151	CER.CAPACITOR	150P	50V
C51	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C52	NCB21EK-473	CER.CAPACITOR	0.047	25V
C53	NCT03CH-150	CER.CAPACITOR	15P	50V
C101	NEA11HM-105	E.CAPACITOR	1.0	50V
C102	NEA11EM-106	E.CAPACITOR	10	25V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C105	NCT03CH-100	CER.CAPACITOR	10P	50V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NCB21EK-473	CER.CAPACITOR	0.047	25V
C108	NEN11HM-105	NP.CAPACITOR	1.0	50V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NCB21EK-473	CER.CAPACITOR	0.047	25V
C201	NEA11HM-105	E.CAPACITOR	1.0	50V
C202	NEA11EM-106	E.CAPACITOR	10	25V
C203	NCB21EK-473	CER.CAPACITOR	0.047	25V
C204	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C205	NCT03CH-100	CER.CAPACITOR	10P	50V
C206	NCB21EK-473	CER.CAPACITOR	0.047	25V
C207	NCB21EK-473	CER.CAPACITOR	0.047	25V
C208	NEN11HM-105	NP.CAPACITOR	1.0	50V
C209	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	NCB21EK-473	CER.CAPACITOR	0.047	25V
C301	NEA11HM-105	E.CAPACITOR	1.0	50V
C302	NEA11EM-106	E.CAPACITOR	10	25V
C303	NCB21EK-473	CER.CAPACITOR	0.047	25V
C304	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C305	NCT03CH-100	CER.CAPACITOR	10P	50V
C306	NCB21EK-473	CER.CAPACITOR	0.047	25V
C307	NCB21EK-473	CER.CAPACITOR	0.047	25V
C308	NEN11HM-105	NP.CAPACITOR	1.0	50V
C309	NCB21EK-473	CER.CAPACITOR	0.047	25V
C310	NCB21EK-473	CER.CAPACITOR	0.047	25V
L1	SSV1330-150	COIL	15μH	
L2	SSV1330-150	COIL	15μH	
L3	SSV1330-150	COIL	15μH	
LC1	SCV1804-222	EMI FILTER		
LC2	SCV1804-222	EMI FILTER		
LC3	SCV1804-222	EMI FILTER		
X1	CE41081-A0A	CRYSTAL	28.636MHz	
CN6	SSV1321-015	CONNECTOR	15 PIN	
CN7	SSV1321-015	CONNECTOR	15 PIN	
CN8	SSV1321-015	CONNECTOR	15 PIN	
CN9	SSV1321-020	CONNECTOR	20 PIN	
TP1	SCV1880-001	TEST POINT		

5.2 ISB board assembly list 5 2
SCK2467-03-00A

5 2 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	3SK157	F.E.T.	NEC
Q4	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	3SK157	F.E.T.	NEC
Q7	2SA1622(M6)	TRANSISTOR	SANYO
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA
D1	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R2	NRSA02J-391	M.G.RESISTOR	390 1/10W
R3	NRSA02J-184	M.G.RESISTOR	180K 1/10W
R4	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R5	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R6	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R7	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R8	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R9	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R10	NRSA02J-101	M.G.RESISTOR	100 1/10W
R11	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R12	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R13	NRSA02J-221	M.G.RESISTOR	220 1/10W
R14	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R15	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R16	NRSA02J-221	M.G.RESISTOR	220 1/10W
R17	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R18	NRSA02J-100	M.G.RESISTOR	10 1/10W
C1	NEF11VM-335	TAN.CAPACITOR	3.3 35V
C2	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C3	NCB21EK-473	CER.CAPACITOR	0.047 25V
C4	NCB21EK-473	CER.CAPACITOR	0.047 25V
C5	NCB21EK-473	CER.CAPACITOR	0.047 25V
C6	NEA10GM-476	E.CAPACITOR	47 4V
C7	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C8	NEF11AM-156	TAN.CAPACITOR	15 10V
C9	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C10	NCT03CH-101	CER.CAPACITOR	100P 50V
C11	NEF10GM-106	TAN.CAPACITOR	10 4V
C12	NCT03CH-560	CER.CAPACITOR	56P 50V
CN3	SCV1770-003	CONNECTOR	3 PIN
CN6	SSV1321-015	CONNECTOR	15 PIN

5.3 ISG board assembly list 5 3
SCK2467-04-00A

5 3 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	3SK157	F.E.T.	NEC
Q4	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	3SK157	F.E.T.	NEC
Q7	2SA1622(M6)	TRANSISTOR	SANYO
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q9	3SK157	F.E.T.	NEC
Q10	2SA1622(M6)	TRANSISTOR	SANYO
Q11	2SC3930(BC)	TRANSISTOR	MATSUSHITA
D1	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R2	NRSA02J-391	M.G.RESISTOR	390 1/10W
R3	NRSA02J-184	M.G.RESISTOR	180K 1/10W
R4	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R5	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R6	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R7	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R8	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R9	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R10	NRSA02J-101	M.G.RESISTOR	100 1/10W
R11	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R12	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R13	NRSA02J-221	M.G.RESISTOR	220 1/10W
R14	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R15	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R16	NRSA02J-221	M.G.RESISTOR	220 1/10W
R17	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R18	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R19	NRSA02J-221	M.G.RESISTOR	220 1/10W
R20	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R21	NRSA02J-100	M.G.RESISTOR	10 1/10W
C1	NEF11VM-335	TAN.CAPACITOR	3.3 35V
C2	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C3	NCB21EK-473	CER.CAPACITOR	0.047 25V
C4	NCB21EK-473	CER.CAPACITOR	0.047 25V
C5	NCB21EK-473	CER.CAPACITOR	0.047 25V
C6	NEA10GM-476	E.CAPACITOR	47 4V
C7	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C8	NEF11AM-156	TAN.CAPACITOR	15 10V
C9	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C10	NCT03CH-101	CER.CAPACITOR	100P 50V
C11	NEF10GM-106	TAN.CAPACITOR	10 4V
C12	NCT03CH-560	CER.CAPACITOR	56P 50V
C13	NCT03CH-330	CER.CAPACITOR	33P 50V
CN4	SCV1770-003	CONNECTOR	3 PIN
CN7	SSV1321-015	CONNECTOR	15 PIN

5.4 ISR board assembly list 5 4

SCK2467-05-00A

5 4 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	3SK157	F.E.T.	NEC
Q4	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	3SK157	F.E.T.	NEC
Q7	2SA1622(M6)	TRANSISTOR	SANYO
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA
D1	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R2	NRSA02J-391	M.G.RESISTOR	390 1/10W
R3	NRSA02J-184	M.G.RESISTOR	180K 1/10W
R4	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R5	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R6	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R7	NRSA02J-273	M.G.RESISTOR	27K 1/10W
R8	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R9	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R10	NRSA02J-101	M.G.RESISTOR	100 1/10W
R11	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R12	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R13	NRSA02J-221	M.G.RESISTOR	220 1/10W
R14	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R15	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R16	NRSA02J-221	M.G.RESISTOR	220 1/10W
R17	NRSA02J-152	M.G.RESISTOR	1.5K 1/10W
R18	NRSA02J-100	M.G.RESISTOR	10 1/10W
C1	NEF11VM-335	TAN.CAPACITOR	3.3 35V
C2	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C3	NCB21EK-473	CER.CAPACITOR	0.047 25V
C4	NCB21EK-473	CER.CAPACITOR	0.047 25V
C5	NCB21EK-473	CER.CAPACITOR	0.047 25V
C6	NEA10GM-476	E.CAPACITOR	47 4V
C7	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C8	NEF11AM-156	TAN.CAPACITOR	15 10V
C9	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C10	NCT03CH-101	CER.CAPACITOR	100P 50V
C11	NEF10GM-106	TAN.CAPACITOR	10 4V
C12	NCT03CH-560	CER.CAPACITOR	56P 50V
CN5	SCV1770-003	CONNECTOR	3 PIN
CN8	SSV1321-015	CONNECTOR	15 PIN

5.5 PA board assembly list 5 5

SCK2423-02-00A

5 5 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	NJM062M	I.C.(M)	JRC
IC2	NJM062M	I.C.(M)	JRC
IC3	MC14053BF	I.C.(M)	MOTOROLA
IC4	NJM062M	I.C.(M)	JRC
IC5	NJM062M	I.C.(M)	JRC
IC6	TC4S81F	I.C.(M)	TOSHIBA
IC7	TC4S69F	I.C.(M)	TOSHIBA
IC101	NJM1496M	I.C.(M)	JRC
IC301	NJM1496M	I.C.(M)	JRC
Q101	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q102	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q103	2SK209(L)	F.E.T.	TOSHIBA
Q104	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q105	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q106	2SK209(L)	F.E.T.	TOSHIBA
Q107	2SK209(L)	F.E.T.	TOSHIBA
Q108	2SK209(L)	F.E.T.	TOSHIBA
Q109	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q110	2SK209(L)	F.E.T.	TOSHIBA
Q111	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q112	2SK209(L)	F.E.T.	TOSHIBA
Q113	2SA1622(M6)	TRANSISTOR	SANYO
Q114	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q115	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q116	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q117	2SK209(L)	F.E.T.	TOSHIBA
Q118	2SK209(L)	F.E.T.	TOSHIBA
Q201	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q202	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q203	2SK209(L)	F.E.T.	TOSHIBA
Q204	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q205	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q206	2SK209(L)	F.E.T.	TOSHIBA
Q207	2SK209(L)	F.E.T.	TOSHIBA
Q208	2SK209(L)	F.E.T.	TOSHIBA
Q209	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q210	2SK209(L)	F.E.T.	TOSHIBA
Q211	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q212	2SK209(L)	F.E.T.	TOSHIBA
Q213	2SA1622(M6)	TRANSISTOR	SANYO
Q214	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q217	2SK209(L)	F.E.T.	TOSHIBA
Q218	2SK209(L)	F.E.T.	TOSHIBA
Q301	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q302	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q303	2SK209(L)	F.E.T.	TOSHIBA
Q304	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q305	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q306	2SK209(L)	F.E.T.	TOSHIBA
Q307	2SK209(L)	F.E.T.	TOSHIBA
Q308	2SK209(L)	F.E.T.	TOSHIBA
Q309	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q310	2SK209(L)	F.E.T.	TOSHIBA
Q311	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q312	2SK209(L)	F.E.T.	TOSHIBA
Q313	2SA1622(M6)	TRANSISTOR	SANYO
Q314	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q315	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q316	2SC3930(BC)	TRANSISTOR	MATSUSHITA

Symbol No.	Part No.	Part Name	Description	
Q317	2SK209(L)	F.E.T.	TOSHIBA	
Q318	2SK209(L)	F.E.T.	TOSHIBA	
D1	MA142A	DIODE	MATSUSHITA	
R1	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R2	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R3	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R4	NRVA02D-1202	M.F.RESISTOR	12.0K	1/10W
R5	NRVA02D-1502	M.F.RESISTOR	15.0K	1/10W
R6	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R7	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R11	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R12	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R13	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R14	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R15	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R101	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R102	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R103	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R104	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R105	NRVA02D-1502	M.F.RESISTOR	15.0K	1/10W
R106	NRSA02J-681	M.G.RESISTOR	680	1/10W
R107	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R108	NRVA02D-2701	M.F.RESISTOR	2.70K	1/10W
R110	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R111	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R112	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R114	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R115	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R116	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R117	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R118	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R119	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R120	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R121	NRSA02J-150	M.G.RESISTOR	15	1/10W
R122	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R124	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R125	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R126	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R127	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R128	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R131	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R132	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R133	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R134	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R135	NRVA02D-1502	M.F.RESISTOR	15.0K	1/10W
R136	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R137	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R138	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R139	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R140	NRVA02D-2701	M.F.RESISTOR	2.70K	1/10W
R141	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R142	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R143	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R144	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R145	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R146	NRSA02J-221	M.G.RESISTOR	220	1/10W

Symbol No.	Part No.	Part Name	Description	
R147	NRSA02J-221	M.G.RESISTOR	220	1/10W
R148	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R149	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R150	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R151	NRVA02D-8202	M.F.RESISTOR	82.0K	1/10W
R152	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R153	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R154	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R159	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R160	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R161	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R162	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R201	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R202	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R203	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R204	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R205	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R206	NRSA02J-681	M.G.RESISTOR	680	1/10W
R207	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R208	NRVA02D-2701	M.F.RESISTOR	2.70K	1/10W
R210	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R211	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R212	NRSA02J-151	M.G.RESISTOR	150	1/10W
R214	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R215	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R216	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R217	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R218	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R219	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R220	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R221	NRSA02J-150	M.G.RESISTOR	15	1/10W
R222	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R224	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R225	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R226	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R227	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R228	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R231	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R232	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R233	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R234	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R235	NRVA02D-1502	M.F.RESISTOR	15.0K	1/10W
R236	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R238	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R250	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R257	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R258	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R259	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R260	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R261	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R262	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R301	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R302	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R303	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R304	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R305	NRVA02D-1502	M.F.RESISTOR	15.0K	1/10W
R306	NRSA02J-681	M.G.RESISTOR	680	1/10W
R307	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R308	NRVA02D-2701	M.F.RESISTOR	2.70K	1/10W

[PA]

Symbol No.	Part No.	Part Name	Description	
R310	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R311	NRSA02J-271	M.G.RESISTOR	270	1/10W
R312	NRSA02J-561	M.G.RESISTOR	560	1/10W
R314	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R315	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R316	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R317	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R318	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R319	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R320	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R321	NRSA02J-150	M.G.RESISTOR	15	1/10W
R322	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R324	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R325	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R326	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R327	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R328	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R331	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R332	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R333	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R334	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R335	NRVA02D-1502	M.F.RESISTOR	15.0K	1/10W
R336	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R337	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R338	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R339	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R340	NRVA02D-2701	M.F.RESISTOR	2.70K	1/10W
R341	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R342	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R343	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R344	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R345	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R346	NRSA02J-221	M.G.RESISTOR	220	1/10W
R347	NRSA02J-221	M.G.RESISTOR	220	1/10W
R348	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R349	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R350	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R351	NRVA02D-8202	M.F.RESISTOR	82.0K	1/10W
R352	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R353	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R354	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R359	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R360	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R361	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R362	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
VR1	NVP1415-202	TRIM.RESISTOR	2K	KNEE
VR2	NVP1415-103	TRIM.RESISTOR	10K	BLACK
VR102	NVP1415-202	TRIM.RESISTOR	2K	B.INGAIN
VR202	NVP1415-102	TRIM.RESISTOR	1K	G.INGAIN
VR302	NVP1415-202	TRIM.RESISTOR	2K	R.INGAIN
C1	NEA10JM-337	E.CAPACITOR	330	6.3V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NCT03CH-101	CER.CAPACITOR	100P	50V
C15	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C16	QEX41AM-336	E.CAPACITOR	33	10V
C101	NCT03CH-150	CER.CAPACITOR	15P	50V
C102	NEA11AM-336	E.CAPACITOR	33	10V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NEA11AM-336	E.CAPACITOR	33	10V
C105	NCB21EK-473	CER.CAPACITOR	0.047	25V
C106	NEN11HM-105	NP.CAPACITOR	1.0	50V
C107	NEN11HM-105	NP.CAPACITOR	1.0	50V
C108	NCT03CH-2R0	CER.CAPACITOR	2.0P	50V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NEA11AM-336	E.CAPACITOR	33	10V
C111	NEA11AM-336	E.CAPACITOR	33	10V
C112	NCB21EK-473	CER.CAPACITOR	0.047	25V
C113	NEA11AM-336	E.CAPACITOR	33	10V
C114	NCB21EK-473	CER.CAPACITOR	0.047	25V
C115	NCB21EK-473	CER.CAPACITOR	0.047	25V
C116	NCB21EK-473	CER.CAPACITOR	0.047	25V
C117	NEA10GM-476	E.CAPACITOR	47	4V
C118	NCB21EK-473	CER.CAPACITOR	0.047	25V
C119	NEA11AM-227	E.CAPACITOR	220	10V
C120	NCT03CH-100	CER.CAPACITOR	10P	50V
C122	NCB21EK-473	CER.CAPACITOR	0.047	25V
C123	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C126	NCT03CH-101	CER.CAPACITOR	100P	50V
C127	NCT03CH-100	CER.CAPACITOR	10P	50V
C128	NCB21EK-473	CER.CAPACITOR	0.047	25V
C202	NEA11AM-336	E.CAPACITOR	33	10V
C203	NCB21EK-473	CER.CAPACITOR	0.047	25V
C204	NEA11AM-336	E.CAPACITOR	33	10V
C205	NCB21EK-473	CER.CAPACITOR	0.047	25V
C206	NEN11HM-105	NP.CAPACITOR	1.0	50V
C207	NEN11HM-105	NP.CAPACITOR	1.0	50V
C208	NCT03CH-7R0	CER.CAPACITOR	7.0P	50V
C209	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	NEA11AM-336	E.CAPACITOR	33	10V
C211	NEA11AM-336	E.CAPACITOR	33	10V
C212	NCB21EK-473	CER.CAPACITOR	0.047	25V
C213	NEA11AM-336	E.CAPACITOR	33	10V
C214	NCB21EK-473	CER.CAPACITOR	0.047	25V
C215	NCB21EK-473	CER.CAPACITOR	0.047	25V
C216	NCB21EK-473	CER.CAPACITOR	0.047	25V
C217	NEA11AM-336	E.CAPACITOR	33	10V
C218	NCB21EK-473	CER.CAPACITOR	0.047	25V
C221	NEA11AM-336	E.CAPACITOR	33	10V
C222	NCB21EK-473	CER.CAPACITOR	0.047	25V
C226	NCT03CH-101	CER.CAPACITOR	100P	50V
C227	NCT03CH-100	CER.CAPACITOR	10P	50V
C301	NCT03CH-150	CER.CAPACITOR	15P	50V
C302	NEA11AM-336	E.CAPACITOR	33	10V
C303	NCB21EK-473	CER.CAPACITOR	0.047	25V
C304	NEA11AM-336	E.CAPACITOR	33	10V
C305	NCB21EK-473	CER.CAPACITOR	0.047	25V
C306	NEN11HM-105	NP.CAPACITOR	1.0	50V

Symbol No.	Part No.	Part Name	Description
C307	NEN11HM-105	NP.CAPACITOR	1.0 50V
C308	NCT03CH-2R0	CER.CAPACITOR	2.0P 50V
C309	NCB21EK-473	CER.CAPACITOR	0.047 25V
C310	NEA11AM-336	E.CAPACITOR	33 10V
C311	NEA11AM-336	E.CAPACITOR	33 10V
C312	NCB21EK-473	CER.CAPACITOR	0.047 25V
C313	NEA11AM-336	E.CAPACITOR	33 10V
C314	NCB21EK-473	CER.CAPACITOR	0.047 25V
C315	NCB21EK-473	CER.CAPACITOR	0.047 25V
C316	NCB21EK-473	CER.CAPACITOR	0.047 25V
C317	NEA10GM-476	E.CAPACITOR	47 4V
C318	NCB21EK-473	CER.CAPACITOR	0.047 25V
C319	NEA11AM-227	E.CAPACITOR	220 10V
C320	NCT03CH-100	CER.CAPACITOR	10P 50V
C322	NCB21EK-473	CER.CAPACITOR	0.047 25V
C323	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C326	NCT03CH-101	CER.CAPACITOR	100P 50V
C327	NCT03CH-100	CER.CAPACITOR	10P 50V
C328	NCB21EK-473	CER.CAPACITOR	0.047 25V
LC101	SCV1859-001	LOWPASS FILTER	
LC102	SCV2366-001	CRYSTAL	
LC201	SCV1859-001	LOWPASS FILTER	
LC202	SCV2366-001	CRYSTAL	
LC301	SCV1859-001	LOWPASS FILTER	
LC302	SCV2366-001	CRYSTAL	
CN3	SCV1770-003	CONNECTOR	3 PIN
CN4	SCV1770-003	CONNECTOR	3 PIN
CN5	SCV1770-003	CONNECTOR	3 PIN
CN10	SSV1321-020	CONNECTOR	20 PIN
CN11	SSV1321-014	CONNECTOR	14 PIN
TP101	SCV1880-001	TEST POINT	
TP201	SCV1880-001	TEST POINT	
TP301	SCV1880-001	TEST POINT	

5.6 PR board assembly list 5 6
SCK2424-03-00A

5 6 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	NJM2068MD	I.C.(M)	JRC
IC2	NJM2068MD	I.C.(M)	JRC
IC3	NJM2068MD	I.C.(M)	JRC
IC4	NJM4560MD	I.C.(M)	JRC
IC5	MC14053BF	I.C.(M)	MOTOROLA
IC6	TC4S81F	I.C.(M)	TOSHIBA
IC7	TC4S81F	I.C.(M)	TOSHIBA
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q101	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q102	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q103	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q104	2SK209(L)	F.E.T.	TOSHIBA
Q105	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q106	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q107	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q108	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q109	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q110	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q111	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q113	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q114	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q115	2SK209(L)	F.E.T.	TOSHIBA
Q201	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q203	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q204	2SK209(L)	F.E.T.	TOSHIBA
Q205	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q206	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q207	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q208	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q209	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q210	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q211	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q213	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q214	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q215	2SK209(L)	F.E.T.	TOSHIBA
Q301	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q302	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q303	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q304	2SK209(L)	F.E.T.	TOSHIBA
Q305	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q306	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q307	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q308	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q309	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q310	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q311	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q313	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q314	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q315	2SK209(L)	F.E.T.	TOSHIBA
D1	MA142A	DIODE	MATSUSHITA
D101	1S2076A	DIODE	HITACHI
D102	1S2076A	DIODE	HITACHI
D103	1S2076A	DIODE	HITACHI
D104	1S2076A	DIODE	HITACHI
D201	1S2076A	DIODE	HITACHI
D202	1S2076A	DIODE	HITACHI

[PR]

Symbol No.	Part No.	Part Name	Description
D203	1S2076A	DIODE	HITACHI
D204	1S2076A	DIODE	HITACHI
D301	1S2076A	DIODE	HITACHI
D302	1S2076A	DIODE	HITACHI
D303	1S2076A	DIODE	HITACHI
D304	1S2076A	DIODE	HITACHI
R1	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R2	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R3	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R4	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R5	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R6	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R7	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R10	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R11	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R101	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R102	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R103	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R104	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R105	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R106	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R107	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R108	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R109	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R110	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R111	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R113	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R115	NRSA02J-683	M.G.RESISTOR	68K 1/10W
R117	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R118	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R119	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R120	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R121	NRVA02D-1500	M.F.RESISTOR	150 1/10W
R122	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R124	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R125	NRSA02J-101	M.G.RESISTOR	100 1/10W
R127	NRSA02J-391	M.G.RESISTOR	390 1/10W
R128	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R129	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R130	NRSA02J-221	M.G.RESISTOR	220 1/10W
R131	NRSA02J-221	M.G.RESISTOR	220 1/10W
R132	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R133	NRSA02J-391	M.G.RESISTOR	390 1/10W
R134	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R135	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R137	NRSA02J-471	M.G.RESISTOR	470 1/10W
R138	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R139	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R140	NRSA02J-100	M.G.RESISTOR	10 1/10W
R141	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R143	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R201	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R202	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R203	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R204	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R205	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R206	NRVA02D-6800	M.F.RESISTOR	680 1/10W

Symbol No.	Part No.	Part Name	Description
R207	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R208	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R209	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R210	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R211	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R213	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R215	NRSA02J-683	M.G.RESISTOR	68K 1/10W
R217	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R218	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R219	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R220	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R221	NRVA02D-1500	M.F.RESISTOR	150 1/10W
R222	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R224	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R225	NRSA02J-101	M.G.RESISTOR	100 1/10W
R227	NRSA02J-391	M.G.RESISTOR	390 1/10W
R228	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R229	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R230	NRSA02J-221	M.G.RESISTOR	220 1/10W
R231	NRSA02J-221	M.G.RESISTOR	220 1/10W
R232	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R233	NRSA02J-391	M.G.RESISTOR	390 1/10W
R234	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R235	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R237	NRSA02J-471	M.G.RESISTOR	470 1/10W
R238	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R239	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R240	NRSA02J-100	M.G.RESISTOR	10 1/10W
R241	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R243	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R301	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R302	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R303	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R304	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R305	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R306	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R307	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R308	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R309	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R310	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R311	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R313	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R315	NRSA02J-683	M.G.RESISTOR	68K 1/10W
R317	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R318	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R319	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R320	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R321	NRVA02D-1500	M.F.RESISTOR	150 1/10W
R322	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R324	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R325	NRSA02J-101	M.G.RESISTOR	100 1/10W
R327	NRSA02J-391	M.G.RESISTOR	390 1/10W
R328	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R329	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R330	NRSA02J-221	M.G.RESISTOR	220 1/10W
R331	NRSA02J-221	M.G.RESISTOR	220 1/10W
R332	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R333	NRSA02J-391	M.G.RESISTOR	390 1/10W
R334	NRSA02J-103	M.G.RESISTOR	10K 1/10W

Symbol No.	Part No.	Part Name	Description	
R335	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R337	NRSA02J-471	M.G.RESISTOR	470	1/10W
R338	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R339	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R340	NRSA02J-100	M.G.RESISTOR	10	1/10W
R341	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R343	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
VR101	QVPB612-103	TRIM.RESISTOR	10K	B FLARE
VR102	QVPB612-102	TRIM.RESISTOR	1.0K	B GAMMA
VR104	QVPB612-102	TRIM.RESISTOR	1.0K	B OUT GAIN
VR201	QVPB612-103	TRIM.RESISTOR	10K	G FLARE
VR202	QVPB612-102	TRIM.RESISTOR	1.0K	G GAMMA
VR204	QVPB612-102	TRIM.RESISTOR	1.0K	G OUT GAIN
VR301	QVPB612-103	TRIM.RESISTOR	10K	R FLARE
VR302	QVPB612-102	TRIM.RESISTOR	1.0K	R GAMMA
VR304	QVPB612-102	TRIM.RESISTOR	1.0K	R OUT GAIN
C1	QETA1EM-108	E.CAPACITOR	1000	25V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	QER40JM-107	E.CAPACITOR	100	6.3V
C13	QER41HM-105	E.CAPACITOR	1.0	50V
C14	NCT03CH-101	CER.CAPACITOR	100P	50V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C101	QER41AM-336	E.CAPACITOR	33	10V
C103	NCT03CH-3R0	CER.CAPACITOR	3.0P	50V
C104	QEPA1CM-106	E.CAPACITOR	10	16V
C105	QER41AM-476	E.CAPACITOR	47	10V
C106	QEJ41VM-105	E.CAPACITOR	1.0	35V
C107	QER40JM-107	E.CAPACITOR	100	6.3V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	QER41AM-336	E.CAPACITOR	33	10V
C111	NCB21EK-473	CER.CAPACITOR	0.047	25V
C112	NCT03CH-330	CER.CAPACITOR	33P	50V
C113	NCT03CH-470	CER.CAPACITOR	47P	50V
C114	NCT03CH-560	CER.CAPACITOR	56P	50V
C201	QER41AM-336	E.CAPACITOR	33	10V
C203	NCT03CH-3R0	CER.CAPACITOR	3.0P	50V
C204	QEPA1CM-106	E.CAPACITOR	10	16V
C205	QER41AM-476	E.CAPACITOR	47	10V
C206	QEJ41VM-105	E.CAPACITOR	1.0	35V
C208	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	QER41AM-336	E.CAPACITOR	33	10V
C211	NCB21EK-473	CER.CAPACITOR	0.047	25V
C212	NCT03CH-330	CER.CAPACITOR	33P	50V
C213	NCT03CH-470	CER.CAPACITOR	47P	50V
C214	NCT03CH-560	CER.CAPACITOR	56P	50V
C301	QER41AM-336	E.CAPACITOR	33	10V
C303	NCT03CH-3R0	CER.CAPACITOR	3.0P	50V
C304	QEPA1CM-106	E.CAPACITOR	10	16V
C305	QER41AM-476	E.CAPACITOR	47	10V
C306	QEJ41VM-105	E.CAPACITOR	1.0	35V
C307	QER40JM-107	E.CAPACITOR	100	6.3V

Symbol No.	Part No.	Part Name	Description	
C308	NCB21EK-473	CER.CAPACITOR	0.047	25V
C310	QER41AM-336	E.CAPACITOR	33	10V
C311	NCB21EK-473	CER.CAPACITOR	0.047	25V
C312	NCT03CH-330	CER.CAPACITOR	33P	50V
C313	NCT03CH-470	CER.CAPACITOR	47P	50V
C314	NCT03CH-560	CER.CAPACITOR	56P	50V
L101	SCV1950-220	PEAKING COIL	22μH	
L201	SCV1950-220	PEAKING COIL	22μH	
L301	SCV1950-220	PEAKING COIL	22μH	
CN9	SCV2447-020	CONNECTOR	20 PIN	
CN10	SCV2446-020	CONNECTOR	20 PIN	
CN11	SCV2446-014	CONNECTOR	14 PIN	
CN12	SCV1978-S07	CONNECTOR	7 PIN	
CN13	SCV2446-006	CONNECTOR	6 PIN	
CN14	SCV2446-010	CONNECTOR	10 PIN	
CN15	SCV2446-008	CONNECTOR	8 PIN	
CN20	SCV2097-060	CONNECTOP	60 PIN	
TP1	SCV1201-001	TEST POINT	JVC	
TP101	SCV1201-001	TEST POINT	JVC	
TP102	SCV1201-001	TEST POINT	JVC	
TP201	SCV1201-001	TEST POINT	JVC	
TP202	SCV1201-001	TEST POINT	JVC	
TP301	SCV1201-001	TEST POINT	JVC	
TP302	SCV1201-001	TEST POINT	JVC	

5.7 CC board assembly list 57
SCK2422-02-N0A for U version
SCK2422-02-P0A for E version 57☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC74HC74AF	I.C.(M)	MOTOROLA
IC2	MC74HC04AF	I.C.(M)	MOTOROLA
IC101	CXL5504M	I.C.(M)	SONY
IC102	CXL5504M	I.C.(M)	SONY
IC103	AD817AR	I.C.(M)	ANALOG DEVICES
IC104	AD817AR	I.C.(M)	ANALOG DEVICES
IC201	CXL5504M	I.C.(M)	SONY
Q1	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q3	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q4	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q7	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q9	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q10	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q11	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q12	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q13	2SJ163(Q.R)	F.E.T.	MATSUSHITA
Q14	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q15	2SK209(L)	F.E.T.	TOSHIBA
Q16	DTC124EU	TRANSISTOR	ROHM
Q17	DTC124EU	TRANSISTOR	ROHM
Q18	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q101	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q102	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q103	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q104	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q105	3SK157	F.E.T.	NEC
Q106	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q107	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q108	3SK157	F.E.T.	NEC
Q109	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q201	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
D1	MA142A	DIODE	MATSUSHITA
D2	HSM88AS	DIODE	HITACHI
D3	HSM88AS	DIODE	HITACHI
R1	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R2	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R4	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R5	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R6	NRVA02D-3902	M.F.RESISTOR	39.0K 1/10W
R7	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R8	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R9	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R10	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R11	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R12	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R13	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R14	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R15	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R16	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R17	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R18	NRVA02D-5600	M.F.RESISTOR	560 1/10W

Symbol No.	Part No.	Part Name	Description
R19	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R20	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R21	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R22	NRSA02J-101	M.G.RESISTOR	100 1/10W
R23	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R25	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R27	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R28	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R29	NRSA02J-821	M.G.RESISTOR	820 1/10W
R30	NRSA02J-821	M.G.RESISTOR	820 1/10W
R31	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R32	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R33	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R34	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R35	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R36	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R37	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R38	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R39	NRVA02D-3902	M.F.RESISTOR	39.0K 1/10W
R40	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R41	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R42	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R43	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R44	NRSA02J-100	M.G.RESISTOR	10 1/10W
R45	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R46	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R47	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R48	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R49	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R50	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R51	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R52	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R53	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R54	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R55	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R56	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R101	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R102	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R103	NRSA02J-471	M.G.RESISTOR	470 1/10W
R104	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R105	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R106	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R107	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R108	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R109	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R110	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R111	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R112	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R113	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R114	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R115	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R116	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R117	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R118	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R119	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R120	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R121	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R122	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R123	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W

Symbol No.	Part No.	Part Name	Description	
R124	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R125	NRSA02J-100	M.G.RESISTOR	10	1/10W
R126	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(E)
R201	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R202	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R203	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R204	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R205	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R206	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R207	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R208	NRSA02J-0R0	M.G.RESISTOR	0	1/10W(E)
VR1	NVP1415-502	TRIM.RESISTOR	5K	V.BAL
VR2	NVP1415-202	TRIM.RESISTOR	2K	V.LEVEL
VR3	NVP1415-202	TRIM.RESISTOR	2K	H.LEVEL
VR4	NVP1415-202	TRIM.RESISTOR	2K	NOISE SLICE
VR101	NVP1415-202	TRIM.RESISTOR	2K	1HG LEVEL
C1	NEN10JM-476	NP.CAPACITOR	47	6.3V
C2	NCB21EK-473	CER.CAPACITOR	0.047	25V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NEA11AM-336	E.CAPACITOR	33	10V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NEA10GM-476	E.CAPACITOR	47	4V
C8	NCT03CH-2R0	CER.CAPACITOR	2.0P	50V
C9	NCT03CH-560	CER.CAPACITOR	56P	50V
C10	NCT03CH-330	CER.CAPACITOR	33P	50V
C11	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C12	NEA10JM-107	E.CAPACITOR	100	6.3V
C13	NEA11AM-336	E.CAPACITOR	33	10V
C14	NCB21EK-473	CER.CAPACITOR	0.047	25V
C15	NEA10GM-476	E.CAPACITOR	47	4V
C16	NEA11AM-336	E.CAPACITOR	33	10V
C17	NCB21EK-473	CER.CAPACITOR	0.047	25V
C18	NEA11EM-106	E.CAPACITOR	10	25V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C21	NEA10JM-107	E.CAPACITOR	100	6.3V
C22	NEA11EM-106	E.CAPACITOR	10	25V
C23	NEA11EM-106	E.CAPACITOR	10	25V
C24	NEA11AM-336	E.CAPACITOR	33	10V
C25	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NEA11AM-336	E.CAPACITOR	33	10V
C101	NEN10JM-476	NP.CAPACITOR	47	6.3V
C102	NCB21EK-473	CER.CAPACITOR	0.047	25V
C103	NEA11CM-476	E.CAPACITOR	47	16V
C104	NEA10GM-476	E.CAPACITOR	47	4V
C105	NCB21EK-473	CER.CAPACITOR	0.047	25V
C106	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C107	NEF11AM-156	TAN.CAPACITOR	15	10V
C108	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NCB21HK-102	CER.CAPACITOR	1000P	50V
C111	NCB21EK-473	CER.CAPACITOR	0.047	25V
C112	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C113	NCB21EK-473	CER.CAPACITOR	0.047	25V
C114	NEA11AM-336	E.CAPACITOR	33	10V

Symbol No.	Part No.	Part Name	Description	
C115	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C116	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C117	NCB21EK-473	CER.CAPACITOR	0.047	25V
C118	NCB21HK-102	CER.CAPACITOR	1000P	50V
C119	NCB21EK-473	CER.CAPACITOR	0.047	25V
C120	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C121	NCB21EK-473	CER.CAPACITOR	0.047	25V
C122	NCB21EK-473	CER.CAPACITOR	0.047	25V
C123	NEA10GM-476	E.CAPACITOR	47	4V
C124	NCB21EK-473	CER.CAPACITOR	0.047	25V
C125	NCT03CH-100	CER.CAPACITOR	10P	50V
C126	NCB21EK-473	CER.CAPACITOR	0.047	25V
C201	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C202	NEF11AM-156	TAN.CAPACITOR	15	10V
C203	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C204	NCB21EK-473	CER.CAPACITOR	0.047	25V
C205	NCB21EK-473	CER.CAPACITOR	0.047	25V
C206	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C207	NCB21EK-473	CER.CAPACITOR	0.047	25V
C208	NEA11AM-336	E.CAPACITOR	33	10V
L1	SSV1330-150	COIL	15μH	
L2	SCV1950-121	PEAKING COIL	120μH	
L3	SSV1330-150	COIL	15μH	
L101	SSV1330-150	COIL	15μH	
L201	SSV1330-150	COIL	15μH	
DL1	SCV1569-001	DELAY LINE		
DL101	SCV2517-001Z	DELAY LINE	100nsec	(U)
DL102	SCV2517-001Z	DELAY LINE	100nsec	
DL201	SCV2517-001Z	DELAY LINE	100nsec	
DL202	SCV2528-001Z	DELAY LINE	150nsec	(U)
CN31	SCV1849-016	CONNECTOR	16 PIN	
TP1	SCV1880-001	TEST POINT		
TP2	SCV1880-001	TEST POINT		
TP3	SCV1880-001	TEST POINT		
TP4	SCV1880-001	TEST POINT		
TP5	SCV1880-001	TEST POINT		
TP6	SCV1880-001	TEST POINT		
TP7	SCV1201-001	TEST POINT		

5.8 N.SE [NTSC] board assembly list 58N
SCK2422-01-U0A for U version 58N☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC14053BF	I.C.(M)	MOTOROLA
IC4	MC74HC367F	I.C.(M)	MOTOROLA
IC5	TC4W53F	I.C.(M)	TOSHIBA
IC6	LM319M	I.C.(M)	NATIONAL SEMI
IC7	TC4S81F	I.C.(M)	TOSHIBA
IC101	AD817AR	I.C.(M)	ANALOG DEVICES
IC201	AD817AR	I.C.(M)	ANALOG DEVICES
IC301	AD817AR	I.C.(M)	ANALOG DEVICES
IC401	MC14577CF	I.C.(M)	MOTOROLA
IC402	MC14577CF	I.C.(M)	MOTOROLA
IC404	AN614	I.C.(M)	MATSUSHITA
IC406	MC14053BF	I.C.(M)	MOTOROLA
IC407	AN614	I.C.(M)	MATSUSHITA
IC408	TC4S69F	I.C.(M)	TOSHIBA
IC501	JCS0018	I.C.(M)	JVC
IC502	MC74HC04AF	I.C.(M)	MOTOROLA
IC503	TC7SU04F	I.C.(M)	TOSHIBA
IC504	TC7SU04F	I.C.(M)	TOSHIBA
IC505	NJM2068MD	I.C.(M)	JRC
IC506	MC74HC4538AF	I.C.(M)	MOTOROLA
IC507	MC74HC04AF	I.C.(M)	MOTOROLA
IC508	TC4S69F	I.C.(M)	TOSHIBA
IC601	TC7S00F	I.C.(M)	TOSHIBA
IC602	NJM2207M	I.C.(M)	JRC
IC701	MC14577CF	I.C.(M)	MOTOROLA
IC702	TC4S81F	I.C.(M)	TOSHIBA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q4	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q7	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q9	DTC124EU	TRANSISTOR	ROHM
Q11	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q102	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q103	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q104	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q105	2SK209(L)	F.E.T.	TOSHIBA
Q107	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q108	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q109	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q110	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q111	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q203	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q204	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q205	2SK209(L)	F.E.T.	TOSHIBA
Q207	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q208	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q210	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q211	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q302	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q303	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q304	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q305	2SK209(L)	F.E.T.	TOSHIBA
Q307	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q308	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q310	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q311	2SC3932(ST)	TRANSISTOR	MATSUSHITA

Symbol No.	Part No.	Part Name	Description
Q402	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q403	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q404	2SK209(L)	F.E.T.	TOSHIBA
Q405	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q406	2SK209(L)	F.E.T.	TOSHIBA
Q407	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q409	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q410	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q601	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q602	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q603	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q604	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q605	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q606	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q607	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q608	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q609	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q701	2SJ163(Q.R)	F.E.T.	MATSUSHITA
Q702	2SA1532(BC)	TRANSISTOR	MATSUSHITA
D1	MA143A	DIODE	MATSUSHITA
D401	MA143A	DIODE	MATSUSHITA
D501	MA335	DIODE	MATSUSHITA
D502	MA335	DIODE	MATSUSHITA
D503	MA335	DIODE	MATSUSHITA
D504	MA335	DIODE	MATSUSHITA
D505	MA142A	DIODE	MATSUSHITA
D601	MA143A	DIODE	MATSUSHITA
D701	MA742	DIODE	MATSUSHITA
R4	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R6	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R8	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R9	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R10	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R13	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R14	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R15	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R16	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R19	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R20	NRVA02D-82R0	M.F.RESISTOR	82.0 1/10W
R21	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R22	NRVA02D-82R0	M.F.RESISTOR	82.0 1/10W
R23	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R24	NRVA02D-82R0	M.F.RESISTOR	82.0 1/10W
R25	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R26	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R27	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R28	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R29	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R30	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R31	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R32	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R34	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R35	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R36	NRSA02J-101	M.G.RESISTOR	100 1/10W
R37	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R38	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R39	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W

Symbol No.	Part No.	Part Name	Description
R40	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R41	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R42	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R43	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R44	NRVA02D-3300	M.F.RESISTOR	330 1/10W
R45	NRVA02D-3300	M.F.RESISTOR	330 1/10W
R46	NRVA02D-1501	M.F.RESISTOR	1.50K 1/10W
R47	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R48	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R49	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R50	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R51	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R52	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R53	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R54	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R55	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R56	NRSA02J-330	M.G.RESISTOR	33 1/10W
R57	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R58	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R59	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R60	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R61	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R62	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R63	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R64	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R65	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R66	NRSA02J-101	M.G.RESISTOR	100 1/10W
R67	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R103	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R104	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R105	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R106	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R107	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R108	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R111	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R112	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R113	NRSA02J-101	M.G.RESISTOR	100 1/10W
R114	NRSA02J-101	M.G.RESISTOR	100 1/10W
R115	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R116	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R117	NRSA02J-101	M.G.RESISTOR	100 1/10W
R118	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R119	NRSA02J-184	M.G.RESISTOR	180K 1/10W
R123	NRVA02D-8201	M.F.RESISTOR	8.20K 1/10W
R125	NRSA02J-101	M.G.RESISTOR	100 1/10W
R127	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R203	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R204	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R205	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R206	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R207	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R208	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R211	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R212	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R213	NRSA02J-101	M.G.RESISTOR	100 1/10W
R214	NRSA02J-101	M.G.RESISTOR	100 1/10W
R215	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R218	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R219	NRSA02J-184	M.G.RESISTOR	180K 1/10W

Symbol No.	Part No.	Part Name	Description
R223	NRVA02D-1501	M.F.RESISTOR	1.50K 1/10W
R225	NRSA02J-101	M.G.RESISTOR	100 1/10W
R227	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R303	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R304	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R305	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R306	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R307	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R308	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R311	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R312	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R313	NRSA02J-101	M.G.RESISTOR	100 1/10W
R314	NRSA02J-101	M.G.RESISTOR	100 1/10W
R315	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R318	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R319	NRSA02J-184	M.G.RESISTOR	180K 1/10W
R323	NRVA02D-8201	M.F.RESISTOR	8.20K 1/10W
R325	NRSA02J-101	M.G.RESISTOR	100 1/10W
R327	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R403	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R404	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R406	NRVA02D-4702	M.F.RESISTOR	47.0K 1/10W
R407	NRVA02D-4702	M.F.RESISTOR	47.0K 1/10W
R408	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R409	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R410	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R411	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R412	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R413	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R414	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R416	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R417	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R418	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R419	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R420	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R421	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R422	NRVA02D-82R0	M.F.RESISTOR	82.0 1/10W
R423	NRSA02J-683	M.G.RESISTOR	68K 1/10W
R424	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R425	NRVA02D-8201	M.F.RESISTOR	8.20K 1/10W
R426	NRVA02D-3300	M.F.RESISTOR	330 1/10W
R427	NRVA02D-1201	M.F.RESISTOR	1.20K 1/10W
R428	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R429	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R430	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R431	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R432	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R433	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R434	NRVA02D-1800	M.F.RESISTOR	180 1/10W
R435	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R436	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R437	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R438	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R440	NRVA02D-4700	M.F.RESISTOR	470 1/10W
R441	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R442	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R443	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R444	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R445	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W

[N. SE]

Symbol No.	Part No.	Part Name	Description	
R446	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R447	NRSA02J-220	M.G.RESISTOR	22	1/10W
R448	NRSA02J-220	M.G.RESISTOR	22	1/10W
R449	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R450	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R451	NRSA02J-821	M.G.RESISTOR	820	1/10W
R452	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R453	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R454	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R455	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R456	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R457	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R458	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R459	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R460	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R461	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R462	NRSA02J-821	M.G.RESISTOR	820	1/10W
R463	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R464	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R465	NRVA02D-1500	M.F.RESISTOR	150	1/10W
R468	NRVA02D-4702	M.F.RESISTOR	47.0K	1/10W
R469	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R474	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R475	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R478	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R479	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R480	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R481	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R482	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R483	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R501	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R502	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R503	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R504	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R505	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R506	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R507	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R508	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R510	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R511	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R512	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R513	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R514	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R515	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R516	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R517	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R518	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R519	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R520	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R521	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R522	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R523	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R524	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R525	NRVA02D-5602	M.F.RESISTOR	56.0K	1/10W
R526	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R527	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R528	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R529	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R530	NRSA02J-104	M.G.RESISTOR	100K	1/10W

Symbol No.	Part No.	Part Name	Description	
R531	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R534	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R535	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R601	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R602	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R603	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R604	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R605	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R606	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R607	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R608	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R609	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R610	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R611	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R612	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R613	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R614	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R615	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R616	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R617	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R618	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R619	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R620	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R621	NRVA02D-1201	M.F.RESISTOR	1.20K	1/10W
R622	NRVA02D-1201	M.F.RESISTOR	1.20K	1/10W
R623	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R624	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R625	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R701	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R702	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R703	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R704	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R705	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R706	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R707	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R708	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R709	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R710	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R711	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R712	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R713	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R714	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R715	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
VR1	NVP1415-202	TRIM.RESISTOR	2K	WHITE CLIP
VR2	NVP1415-501	TRIM.RESISTOR	500	BLACK SLICE
VR401	NVP1415-203	TRIM.RESISTOR	20K	SYNC LEVEL
VR402	NVP1415-501	TRIM.RESISTOR	500	Y.LEVEL
VR403	NVP1415-201NZ	V.RESISTOR	200	CHROMA BAL
VR405	NVP1415-102	TRIM.RESISTOR	1K	BURST LEVEL
VR406	NVP1415-102	TRIM.RESISTOR	1K	B-Y C.BAL
VR407	NVP1415-102	TRIM.RESISTOR	1K	R-Y C.BAL
VR409	NVP1415-102	TRIM.RESISTOR	1K	QUAD
VR410	NVP1415-501	TRIM.RESISTOR	500	CHROMA
VR501	NVP1415-203	TRIM.RESISTOR	20K	fsc
VR502	NVP1415-203	TRIM.RESISTOR	20K	EOH
VR505	QVPB609-203	TRIM.RESISTOR	20K	H.PHASE
VR601	QVPB609-202	TRIM.RESISTOR	2.0K	SC FINE
VR701	QVPB609-103	TRIM.RESISTOR	10K	VF PEAK LVL

Symbol No.	Part No.	Part Name	Description
C1	NEA10GM-476	E.CAPACITOR	47 4V
C2	NCB21EK-473	CER.CAPACITOR	0.047 25V
C3	NCB21EK-473	CER.CAPACITOR	0.047 25V
C4	NCB21HK-103	CER.CAPACITOR	0.010 50V
C5	NEA11AM-336	E.CAPACITOR	33 10V
C6	NCB21EK-473	CER.CAPACITOR	0.047 25V
C7	NCB21EK-473	CER.CAPACITOR	0.047 25V
C8	NCT03CH-680	CER.CAPACITOR	68P 50V
C9	NEN10JM-476	NP.CAPACITOR	47 6.3V
C10	NCB21EK-473	CER.CAPACITOR	0.047 25V
C11	NCB21EK-473	CER.CAPACITOR	0.047 25V
C13	NCT03CH-470	CER.CAPACITOR	47P 50V
C15	NEA11AM-336	E.CAPACITOR	33 10V
C16	NCB21EK-473	CER.CAPACITOR	0.047 25V
C17	NCB21EK-473	CER.CAPACITOR	0.047 25V
C18	NEA10GM-476	E.CAPACITOR	47 4V
C19	NCB21EK-473	CER.CAPACITOR	0.047 25V
C20	NCB21EK-473	CER.CAPACITOR	0.047 25V
C21	NEA11AM-336	E.CAPACITOR	33 10V
C22	NCT03CH-101	CER.CAPACITOR	100P 50V
C23	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C24	NCB21EK-473	CER.CAPACITOR	0.047 25V
C101	NEA11AM-336	E.CAPACITOR	33 10V
C103	NCB21EK-473	CER.CAPACITOR	0.047 25V
C104	NCB21EK-473	CER.CAPACITOR	0.047 25V
C105	NEA11AM-336	E.CAPACITOR	33 10V
C106	NCB21EK-473	CER.CAPACITOR	0.047 25V
C107	NEA11AM-336	E.CAPACITOR	33 10V
C108	NCB21EK-473	CER.CAPACITOR	0.047 25V
C112	NCT03CH-470	CER.CAPACITOR	47P 50V
C113	NCB21EK-473	CER.CAPACITOR	0.047 25V
C114	NCB21EK-473	CER.CAPACITOR	0.047 25V
C201	NEA11AM-336	E.CAPACITOR	33 10V
C202	NEA11AM-336	E.CAPACITOR	33 10V
C203	NCB21EK-473	CER.CAPACITOR	0.047 25V
C204	NCB21EK-473	CER.CAPACITOR	0.047 25V
C205	NEA11AM-336	E.CAPACITOR	33 10V
C206	NCB21EK-473	CER.CAPACITOR	0.047 25V
C207	NEA11AM-336	E.CAPACITOR	33 10V
C208	NCB21EK-473	CER.CAPACITOR	0.047 25V
C212	NCT03CH-470	CER.CAPACITOR	47P 50V
C213	NCB21EK-473	CER.CAPACITOR	0.047 25V
C214	NCB21EK-473	CER.CAPACITOR	0.047 25V
C301	NEA11AM-336	E.CAPACITOR	33 10V
C303	NCB21EK-473	CER.CAPACITOR	0.047 25V
C304	NCB21EK-473	CER.CAPACITOR	0.047 25V
C305	NEA11AM-336	E.CAPACITOR	33 10V
C306	NCB21EK-473	CER.CAPACITOR	0.047 25V
C307	NEA11AM-336	E.CAPACITOR	33 10V
C308	NCB21EK-473	CER.CAPACITOR	0.047 25V
C312	NCT03CH-470	CER.CAPACITOR	47P 50V
C313	NCB21EK-473	CER.CAPACITOR	0.047 25V
C314	NCB21EK-473	CER.CAPACITOR	0.047 25V
C401	NCT03CH-330	CER.CAPACITOR	33P 50V
C402	NCT03CH-150	CER.CAPACITOR	15P 50V
C403	NCB21EK-473	CER.CAPACITOR	0.047 25V
C404	NCB21EK-473	CER.CAPACITOR	0.047 25V
C408	NCT03CH-7R0	CER.CAPACITOR	7.0P 50V
C409	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C410	NCT03CH-121	CER.CAPACITOR	120P 50V

Symbol No.	Part No.	Part Name	Description
C411	NCT03CH-560	CER.CAPACITOR	56P 50V
C412	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C413	NCB21EK-473	CER.CAPACITOR	0.047 25V
C414	NCB21EK-473	CER.CAPACITOR	0.047 25V
C415	NCT03CH-121	CER.CAPACITOR	120P 50V
C416	NCT03CH-560	CER.CAPACITOR	56P 50V
C417	NCT03CH-150	CER.CAPACITOR	15P 50V
C418	NEF11VM-104	TAN.CAPACITOR	0.10 35V
C419	NEF11VM-104	TAN.CAPACITOR	0.10 35V
C420	NEA11AM-336	E.CAPACITOR	33 10V
C421	NCB21EK-473	CER.CAPACITOR	0.047 25V
C422	NCB21EK-473	CER.CAPACITOR	0.047 25V
C423	NCB21EK-473	CER.CAPACITOR	0.047 25V
C424	NCB21EK-473	CER.CAPACITOR	0.047 25V
C426	NEA11AM-336	E.CAPACITOR	33 10V
C427	NCB21EK-473	CER.CAPACITOR	0.047 25V
C428	NCT03CH-151	CER.CAPACITOR	150P 50V
C429	NEA11AM-336	E.CAPACITOR	33 10V
C430	NCB21EK-473	CER.CAPACITOR	0.047 25V
C431	NCT03UJ-120	CER.CAPACITOR	12P 50V
C432	NCB21HK-103	CER.CAPACITOR	0.010 50V
C433	NCT03CH-220	CER.CAPACITOR	22P 50V
C435	NCB21HK-272	CER.CAPACITOR	2700P 50V
C436	NCB21EK-473	CER.CAPACITOR	0.047 25V
C437	NEA11AM-336	E.CAPACITOR	33 10V
C438	NCB21EK-473	CER.CAPACITOR	0.047 25V
C439	NCB21EK-473	CER.CAPACITOR	0.047 25V
C440	NCB21EK-473	CER.CAPACITOR	0.047 25V
C441	NCT03CH-150	CER.CAPACITOR	15P 50V
C442	NCT03CH-330	CER.CAPACITOR	33P 50V
C443	NCT03UJ-560	CER.CAPACITOR	56P 50V
C444	NCB21HK-103	CER.CAPACITOR	0.010 50V
C446	NCB21EK-473	CER.CAPACITOR	0.047 25V
C448	NCB21EK-473	CER.CAPACITOR	0.047 25V
C450	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C451	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C501	NCB21EK-473	CER.CAPACITOR	0.047 25V
C502	NCB21HK-103	CER.CAPACITOR	0.010 50V
C503	NCB21EK-473	CER.CAPACITOR	0.047 25V
C504	NCT03CH-102	CER.CAPACITOR	1000P 50V
C505	NCT03CH-102	CER.CAPACITOR	1000P 50V
C506	NCB21HK-103	CER.CAPACITOR	0.010 50V
C507	NCB21EK-473	CER.CAPACITOR	0.047 25V
C508	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C509	NEA11AM-336	E.CAPACITOR	33 10V
C510	NCB21EK-473	CER.CAPACITOR	0.047 25V
C511	NCB21EK-473	CER.CAPACITOR	0.047 25V
C512	NCB21EK-473	CER.CAPACITOR	0.047 25V
C513	NCB21EK-473	CER.CAPACITOR	0.047 25V
C514	NEA11AM-336	E.CAPACITOR	33 10V
C515	NCB21EK-473	CER.CAPACITOR	0.047 25V
C516	NCT03CH-221	CER.CAPACITOR	220P 50V
C517	NCT03CH-221	CER.CAPACITOR	220P 50V
C518	NCB21HK-103	CER.CAPACITOR	0.010 50V
C519	NCB21EK-473	CER.CAPACITOR	0.047 25V
C520	NCB21EK-473	CER.CAPACITOR	0.047 25V
C521	NCB21EK-473	CER.CAPACITOR	0.047 25V
C522	NEF11CM-105	TAN.CAPACITOR	1.0 16V
C523	NCT03CH-560	CER.CAPACITOR	56P 50V
C524	NCB21EK-473	CER.CAPACITOR	0.047 25V

[N. SE]

Symbol No.	Part No.	Part Name	Description
C525	NCB21EK-473	CER.CAPACITOR	0.047 25V
C526	NCB21EK-473	CER.CAPACITOR	0.047 25V
C527	NEA11AM-336	E.CAPACITOR	33 10V
C528	NCB21EK-473	CER.CAPACITOR	0.047 25V
C529	NCT03CH-101	CER.CAPACITOR	100P 50V
C532	NCB21EK-473	CER.CAPACITOR	0.047 25V
C533	NCT03CH-470	CER.CAPACITOR	47P 50V
C534	NCT03CH-120	CER.CAPACITOR	12P 50V
C535	NCB21EK-473	CER.CAPACITOR	0.047 25V
C601	NEN10JM-476	NP.CAPACITOR	47 6.3V
C602	NCT03CH-100	CER.CAPACITOR	10P 50V
C603	NCT03CH-101	CER.CAPACITOR	100P 50V
C604	NEA11AM-336	E.CAPACITOR	33 10V
C605	NCT03CH-220	CER.CAPACITOR	22P 50V
C606	NCB21EK-473	CER.CAPACITOR	0.047 25V
C607	NCT03CH-820	CER.CAPACITOR	82P 50V
C608	NCB21EK-473	CER.CAPACITOR	0.047 25V
C609	NCT03CH-101	CER.CAPACITOR	100P 50V
C610	NCT03CH-121	CER.CAPACITOR	120P 50V
C611	NCT03CH-101	CER.CAPACITOR	100P 50V
C612	NCB21EK-473	CER.CAPACITOR	0.047 25V
C613	NCB21EK-473	CER.CAPACITOR	0.047 25V
C614	NEA11HM-105	E.CAPACITOR	1.0 50V
C615	NEA11AM-336	E.CAPACITOR	33 10V
C701	NEA11AM-336	E.CAPACITOR	33 10V
C702	NCB21EK-473	CER.CAPACITOR	0.047 25V
C703	NEA10GM-476	E.CAPACITOR	47 4V
C704	NCB21EK-473	CER.CAPACITOR	0.047 25V
C705	NCB21EK-473	CER.CAPACITOR	0.047 25V
C706	NEA10GM-476	E.CAPACITOR	47 4V
C707	NCT03CH-100	CER.CAPACITOR	10P 50V
C708	NCB21EK-473	CER.CAPACITOR	0.047 25V
L101	SCV1950-470	PEAKING COIL	47μH
L102	SCV1950-220	PEAKING COIL	22μH
L103	SCV1950-470	PEAKING COIL	47μH
L401	SCV1950-220	PEAKING COIL	22μH
L402	SCV1950-560	PEAKING COIL	56μH
L403	SCV1950-820	PEAKING COIL	82μH
L601	SCV1950-390	PEAKING COIL	39μH
DL1	SCV2528-001Z	DELAY LINE	150nsec
DL2	SCV2528-001Z	DELAY LINE	150nsec
DL101	SCV2526-001	DELAY LINE	160nsec
DL201	SCV1694-001	DELAY LINE	
DL301	SCV2526-001	DELAY LINE	160nsec
DL401	SCV2528-001Z	DELAY LINE	150nsec
DL402	SCV2528-001Z	DELAY LINE	150nsec
X1	SCV0347-002	CRYSTAL	14.31818MHz
X2	CE41081-A0A	CRYSTAL	28.63636MHz
S1	SCV0389-011	SLIDE SWITCH	SC COARSE
S2	SSV2664	SLID SW	ZEBRA
CN29	SCV2089-020	CONNECTOR	20 PIN
CN30	SSV1321-020	CONNECTOR	20 PIN

Symbol No.	Part No.	Part Name	Description
CN31	SCV1848-016	CONNECTOR	16 PIN
CN32	SCV1770-003	CONNECTOR	3 PIN
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1201-001	TEST POINT	
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1201-001	TEST POINT	
TP12	SCV1201-001	TEST POINT	
TP13	SCV1880-001	TEST POINT	

5.9 CP board assembly list 59
SCK2423-01-00A

59☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MB89T715APF	I.C.(M)	FUJITSU
IC2	PLSC1106	I.C.(M)	MBM27C512-20CZ
IC3	LH5116NA-10	I.C.(M)	SHARP
IC4	MC74HC165F	I.C.(M)	MOTOROLA
IC5	MC74HC373AF	I.C.(M)	MOTOROLA
IC6	MC74HC139AF	I.C.(M)	MOTOROLA
IC7	MB89012-109	I.C.(M)	FUJITSU
IC8	MC74HC367F	I.C.(M)	MOTOROLA
IC9	JCS0005	I.C.(M)	JVC
IC11	MC74HC04AF	I.C.(M)	MOTOROLA
IC12	S-2914AIF10	I.C.(M)	SEIKO
IC13	MB88342PF	I.C.(M)	FUJITSU
IC14	NJM062M	I.C.(M)	JRC
IC15	MC14053BF	I.C.(M)	MOTOROLA
IC16	NJM062M	I.C.(M)	JRC
IC17	NJM062M	I.C.(M)	JRC
IC18	NJM062M	I.C.(M)	JRC
IC19	MC14052BF	I.C.(M)	MOTOROLA
IC20	NJM062M	I.C.(M)	JRC
IC21	MC74HC165F	I.C.(M)	MOTOROLA
IC22	S-8054HNCB	I.C.(M)	SEIKO
IC23	TC4066BF	I.C.(M)	TOSHIBA
IC25	NJM2904M	I.C.(M)	JRC
IC28	MC74HC138AF	I.C.(M)	MOTOROLA
IC29	MC74HC04AF	I.C.(M)	MOTOROLA
IC30	MC14094BF	I.C.(M)	MOTOROLA
IC31	TC4S66F	I.C.(M)	TOSHIBA
IC32	TC7S08F	I.C.(M)	TOSHIBA
IC34	MC74HC367F	I.C.(M)	MOTOROLA
IC35	NJM2902M	I.C.(M)	JRC
IC36	TC4049BF	I.C.(M)	TOSHIBA
IC38	RC78L05UA	I.C.(M)	RAYTHEON
IC39	MC74HC574AFL	I.C.(M)	MOTOROLA
IC40	MC14053BF	I.C.(M)	MOTOROLA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q10	2SC3930(BC)	TRANSISTOR	MATSUSHITA
D3	MA143A	DIODE	MATSUSHITA
D4	MA335	DIODE	MATSUSHITA
D5	MA142A	DIODE	MATSUSHITA
D6	MA142A	DIODE	MATSUSHITA
D7	MA143A	DIODE	MATSUSHITA
D8	MA143A	DIODE	MATSUSHITA
D9	MA142A	DIODE	MATSUSHITA
D10	MA142A	DIODE	MATSUSHITA
D13	MA142A	DIODE	MATSUSHITA
D14	MA142A	DIODE	MATSUSHITA
D15	MA143A	DIODE	MATSUSHITA
D18	MA143A	DIODE	MATSUSHITA
D20	MA143A	DIODE	MATSUSHITA
D22	MA143A	DIODE	MATSUSHITA
D23	MA143A	DIODE	MATSUSHITA
D24	MA143A	DIODE	MATSUSHITA
D25	MA142WK	DIODE	MATSUSHITA
R1	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R3	NRSA02J-101	M.G.RESISTOR	100 1/10W
R5	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R6	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R7	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R8	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R9	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R12	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R13	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R14	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R15	NRSA02J-101	M.G.RESISTOR	100 1/10W
R16	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R20	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R21	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R23	NRSA02J-394	M.G.RESISTOR	390K 1/10W
R24	NRSA02J-124	M.G.RESISTOR	120K 1/10W
R25	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R26	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R27	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R42	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R43	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R44	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R45	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R46	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R47	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R49	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R50	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R51	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R52	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R53	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R54	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R55	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R56	NRSA02J-224	M.G.RESISTOR	220K 1/10W
R57	NRSA02J-123	M.G.RESISTOR	12K 1/10W
R58	NRSA02J-334	M.G.RESISTOR	330K 1/10W
R59	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R61	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R62	NRVA02D-6802	M.F.RESISTOR	68.0K 1/10W
R63	NRVA02D-2703	M.F.RESISTOR	270K 1/10W
R64	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R65	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R66	NRVA02D-1003	M.F.RESISTOR	100K 1/10W
R67	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R68	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R69	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R70	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R71	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R72	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R73	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R74	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R75	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R76	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R77	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R78	NRSA02J-183	M.G.RESISTOR	18K 1/10W
R79	NRSA02J-333	M.G.RESISTOR	33K 1/10W
R80	NRVA02D-6802	M.F.RESISTOR	68.0K 1/10W
R81	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R82	NRSA02J-474	M.G.RESISTOR	470K 1/10W
R83	NRSA02J-474	M.G.RESISTOR	470K 1/10W

[CP]

Symbol No.	Part No.	Part Name	Description	
R84	NRSA02J-101	M.G.RESISTOR	100	1/10W
R85	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R87	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R88	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R89	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R90	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R91	NRSA02J-101	M.G.RESISTOR	100	1/10W
R92	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R93	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R100	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R101	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R102	NRSA02J-101	M.G.RESISTOR	100	1/10W
R103	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R105	NRSA02J-101	M.G.RESISTOR	100	1/10W
R106	NRSA02J-220	M.G.RESISTOR	22	1/10W
R107	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R108	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R109	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R110	NRSA02J-101	M.G.RESISTOR	100	1/10W
R111	NRSA02J-101	M.G.RESISTOR	100	1/10W
R112	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R113	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R115	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R116	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R117	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R118	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R119	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R120	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R122	NRSA02J-101	M.G.RESISTOR	100	1/10W
R123	NRSA02J-101	M.G.RESISTOR	100	1/10W
R124	NRSA02J-220	M.G.RESISTOR	22	1/10W
R125	NRSA02J-101	M.G.RESISTOR	100	1/10W
R126	NRSA02J-101	M.G.RESISTOR	100	1/10W
R127	NRSA02J-101	M.G.RESISTOR	100	1/10W
R128	NRSA02J-101	M.G.RESISTOR	100	1/10W
R129	NRSA02J-101	M.G.RESISTOR	100	1/10W
R130	NRSA02J-101	M.G.RESISTOR	100	1/10W
R131	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R132	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R133	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R134	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R135	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R136	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R137	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R138	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R139	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R140	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R141	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R142	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R143	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R144	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R145	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R146	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R147	NRSA02J-334	M.G.RESISTOR	330K	1/10W
R148	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R149	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R150	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R151	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R152	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R153	NRSA02J-101	M.G.RESISTOR	100	1/10W

Symbol No.	Part No.	Part Name	Description	
R154	NRSA02J-101	M.G.RESISTOR	100	1/10W
R155	NRSA02J-101	M.G.RESISTOR	100	1/10W
R157	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R158	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R159	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R162	NRSA02J-223	M.G.RESISTOR	22K	1/10W
VR1	NVP1415-502	TRIM.RESISTOR	5K	B WH ADJ
VR2	NVP1415-502	TRIM.RESISTOR	5K	R WH ADJ
VR3	NVP1415-503	TRIM.RESISTOR	50K	NAM LEVEL
VR5	NVP1415-104	TRIM.RESISTOR	100K	A/D OFFSET
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	NCB21HK-562	CER.CAPACITOR	5600P	50V
C3	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C5	NCT03CH-560	CER.CAPACITOR	56P	50V
C7	NCT03CH-150	CER.CAPACITOR	15P	50V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCT03CH-821	CER.CAPACITOR	820P	50V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCT03CH-181	CER.CAPACITOR	180P	50V
C12	NCT03CH-151	CER.CAPACITOR	150P	50V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NCB21EK-473	CER.CAPACITOR	0.047	25V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCB21EK-473	CER.CAPACITOR	0.047	25V
C18	NEF11AM-156	TAN.CAPACITOR	15	10V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C21	NCB21EK-473	CER.CAPACITOR	0.047	25V
C22	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NCB21EK-473	CER.CAPACITOR	0.047	25V
C24	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NCB21EK-473	CER.CAPACITOR	0.047	25V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCB21EK-473	CER.CAPACITOR	0.047	25V
C31	NCB21EK-393	CER.CAPACITOR	0.039	25V
C33	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C34	NEN11HM-105	NP.CAPACITOR	1.0	50V
C35	NCT03CH-150	CER.CAPACITOR	15P	50V
C36	NCB21EK-473	CER.CAPACITOR	0.047	25V
C37	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C38	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C39	NCB21EK-473	CER.CAPACITOR	0.047	25V
C40	NCB21EK-473	CER.CAPACITOR	0.047	25V
C41	NEA11EM-106	E.CAPACITOR	10	25V
C42	NCB21EK-473	CER.CAPACITOR	0.047	25V
C43	NEA11CM-476	E.CAPACITOR	47	16V
C44	NEA10JM-337	E.CAPACITOR	330	6.3V
C45	NEF11AM-156	TAN.CAPACITOR	15	10V
C46	NEA10JM-337	E.CAPACITOR	330	6.3V
C47	NEN11HM-105	NP.CAPACITOR	1.0	50V
C52	NCB21EK-473	CER.CAPACITOR	0.047	25V
C54	NCB21EK-473	CER.CAPACITOR	0.047	25V
C55	NCB21EK-473	CER.CAPACITOR	0.047	25V
C56	NCB21EK-473	CER.CAPACITOR	0.047	25V
C57	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description
C58	NCB21EK-473	CER.CAPACITOR	0.047 25V
C62	NCB21EK-473	CER.CAPACITOR	0.047 25V
C63	NCB21EK-473	CER.CAPACITOR	0.047 25V
C64	NCB21EK-473	CER.CAPACITOR	0.047 25V
C65	NCB21EK-473	CER.CAPACITOR	0.047 25V
C66	NEF11EM-475	TAN.CAPACITOR	4.7 25V
C68	NCB21EK-473	CER.CAPACITOR	0.047 25V
C69	NCB21EK-473	CER.CAPACITOR	0.047 25V
C70	NCB21EK-473	CER.CAPACITOR	0.047 25V
L1	SSV1330-150	COIL	15μH
L2	SSV1330-150	COIL	15μH
L3	SCV1950-220	PEAKING COIL	22μH
L4	SCV1950-4R7	PEAKING COIL	4.7μH
X1	SCV2029-001	CRYSTAL	7.373MHz
S1	SCV2247-008	DIP SWITCH	
S2	SCV2169-001	SLIDE SWITCH	IRIS
S3	SCV2162-001	SWITCH	LOLUX
S4	SCV2162-001	SWITCH	SHUTTER CHANGE
S5	SCV0255-001	SLIDE SWITCH	SHUTTER
CN21	SSV1321-020	CONNECTOR	20 PIN
CN22	SCV2089-020	CONNECTOR	20 PIN HINGE
CN23	SSV1321-020	CONNECTOR	20 PIN
CN100	SCV1770-005	CONNECTOR	5 PIN
TP1	SCV1201-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	

5.10 PS board assembly list 6 0
SCK2316-02-00A

6 0 ☐☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC14001BFL	I.C.(M)	MOTROLA
IC2	DN819	I.C.(M)	MATSUSHITA
IC3	NJM79M05FA	I.C.(M)	JRC
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q4	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q5	2SC3303(Y)	TRANSISTOR	TOSHIBA
Q6	2SC3303(Y)	TRANSISTOR	TOSHIBA
D1	MA143A	DIODE	MATSUSHITA
D2	MA142WA	DIODE	MATSUSHITA
⚠ D3	ERA82-004	DIODE	FUJIELECTRIC
⚠ D4	ERA82-004	DIODE	FUJIELECTRIC
⚠ D5	ERA82-004	DIODE	FUJIELECTRIC
⚠ D6	ERA82-004	DIODE	FUJIELECTRIC
⚠ D7	ERA82-004	DIODE	FUJIELECTRIC
⚠ D8	ERA82-004	DIODE	FUJIELECTRIC
⚠ D9	ERA82-004	DIODE	FUJIELECTRIC
⚠ D10	ERA82-004	DIODE	FUJIELECTRIC
D11	MA143A	DIODE	MATSUSHITA
D12	MA142WK	DIODE	MATSUSHITA
R1	NRSA02J-101	M.G.RESISTOR	100 1/10W
R2	NRSA02J-101	M.G.RESISTOR	100 1/10W
R3	NRSA02J-471	M.G.RESISTOR	470 1/10W
R4	NRSA02J-471	M.G.RESISTOR	470 1/10W
R5	NRSA02J-180	M.G.RESISTOR	18 1/10W
C1	NCB21EK-473	CER.CAPACITOR	0.047 25V
C2	QER41EM-106	E.CAPACITOR	10 25V
C3	QER41EM-106	E.CAPACITOR	10 25V
C4	QETA1AM-477	E.CAPACITOR	470 10V
C5	QETA1AM-477	E.CAPACITOR	470 10V
C6	QETA1AM-477	E.CAPACITOR	470 10V
C7	QETA1EM-477	E.CAPACITOR	470 25V
C8	QETA1CM-337	E.CAPACITOR	330 16V
C9	QETA1AM-477	E.CAPACITOR	470 10V
C10	QETA1AM-477	E.CAPACITOR	470 10V
C11	QETA1EM-477	E.CAPACITOR	470 25V
C12	QETA1CM-337	E.CAPACITOR	330 16V
C13	QETA0JM-337	E.CAPACITOR	330 6.3V
C14	QFN41HJ-392	MY.CAPACITOR	3900P 50V
L1	SCV0983-500	PEAKING COIL	50μH
L2	SCV0983-500	PEAKING COIL	50μH
L3	SCV0983-500	PEAKING COIL	50μH
L4	SCV0983-500	PEAKING COIL	50μH
L5	SCV0983-500	PEAKING COIL	50μH
CN52	SSV1591-S10	CONNECTOR	10 PIN
TP1	SCV1397	TEST POINT	

[PS]

Symbol No.	Part No.	Part Name	Description
⚠ CP1	ICP-F10	I.C.PROTECTOR	
⚠ CP2	ICP-F10	I.C.PROTECTOR	
⚠ CP3	ICP-F10	I.C.PROTECTOR	
⚠ CP4	ICP-F10	I.C.PROTECTOR	
⚠ T1	SCV2033-001	DC-DC TRANSF.	

5.11 AU board assembly list 6 1
SCK2314-06-00A

61□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	NJM2068MD	I.C.(M)	JRC
D1	MA143A	DIODE	MATSUSHITA
D2	MA143A	DIODE	MATSUSHITA
R1	NRSA02J-100	M.G.RESISTOR	10 1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R3	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R4	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R5	NRSA02J-101	M.G.RESISTOR	100 1/10W
R6	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R7	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R8	NRSA02J-101	M.G.RESISTOR	100 1/10W
R9	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R10	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R11	NRSA02J-682	M.G.RESISTOR	6.8K 1/10W
R12	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R13	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
C1	NEA11AM-336	E.CAPACITOR	33 10V
C2	NCT03CH-681	CER.CAPACITOR	680P 50V
C3	NCT03CH-681	CER.CAPACITOR	680P 50V
C4	NEA11EM-106	E.CAPACITOR	10 25V
C5	NEA11EM-106	E.CAPACITOR	10 25V
C6	NEA11AM-336	E.CAPACITOR	33 10V
C7	NCB21HK-222	CER.CAPACITOR	2200P 50V
C8	NCB21HK-222	CER.CAPACITOR	2200P 50V
C9	NEA11AM-336	E.CAPACITOR	33 10V
C10	NCB21EK-473	CER.CAPACITOR	0.047 25V
C11	NEA11EM-106	E.CAPACITOR	10 25V
C12	NEA11EM-106	E.CAPACITOR	10 25V
CN26	SCV1770-004	CONNECTOR	4 PIN
CN27	SCV1770-006	CONNECTOR	6 PIN

5.12 MT board assembly list 6 2
SCK2424-01-00A

62□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	SCV2241-001	IC SOCKET	
Q1	DTA124EU	TRANSISTOR	ROHM
Q2	DTC124EU	TRANSISTOR	ROHM
Q3	DTA124EU	TRANSISTOR	ROHM
Q4	DTC124EU	TRANSISTOR	ROHM
D1	SB140	DIODE	GENERAL INST
D2	MA143A	DIODE	MATSUSHITA
D3	MA143A	DIODE	MATSUSHITA
D4	ERA82-004	DIODE	FUJIELECTRIC
D5	ERA82-004	DIODE	FUJIELECTRIC
D6	ERA82-004	DIODE	FUJIELECTRIC
R1	QRD161J-102	C.RESISTOR	1.0K 1/6W
R2	QRD161J-102	C.RESISTOR	1.0K 1/6W
C1	QEU41EM-477	E.CAPACITOR	470 25V
C2	QEU41EM-477	E.CAPACITOR	470 25V
C3	QER41CM-107	E.CAPACITOR	100 16V
C4	QEU41EM-477	E.CAPACITOR	470 25V
C5	QEX41AK-226	E.CAPACITOR	22 10V
C6	QEX41AK-226	E.CAPACITOR	22 10V
C7	QEXA1CM-107	E.CAPACITOR	100 16V
C8	QEXA1CM-107	E.CAPACITOR	100 16V
C9	QEX41CM-156	E.CAPACITOR	15 16V
L1	SCV0983-500	PEAKING COIL	50μH
L2	SCV0983-500	PEAKING COIL	50μH
LC1	EXC-EMT102BT	LC FILTER	
CN1	SSV1209-L04	CONNECTOR	4 PIN
CN2	SCV2447-020	FPC CONNECTOR	
CN20	SCV2096-060	CONNECTOR	60 PIN
CN21	SCV2447-020	FPC CONNECTOR	
CN22	SCV2088-020	CONNECTOR	20 PIN
CN23	SCV2447-020	FPC CONNECTOR	
CN24	SSV1591-L10	CONNECTOR	10 PIN
CN25	SCV1978-L03	CONNECTOR	3 PIN
CN26	SCV1978-L04	CONNECTOR	4 PIN
CN28	SSV1591-L03	CONNECTOR	3 PIN
CN29	SCV2088-020	CONNECTOR	20 PIN HINGE
CN30	SCV2447-020	CONNECTOR	20 PIN
CN33	SSV1283-002	CONNECTOR	2 PIN
CN36	SCV2447-010	CONNECTOR	10 PIN

5.13 REG board assembly list 63
SCK2316-04-00A

63□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	SI-3090C	I.C.(M)	SANKEN
C1	QCZ0206-104	CER.CAPACITOR	0.10
C2	QCZ0206-104	CER.CAPACITOR	0.10
CN28	SSV1591-S03	CONNECTOR	3 PIN

5.14 LE board assembly list 64
SCK2316-05-00A

64□□□□□□

Symbol No.	Part No.	Part Name	Description
D1	MA143A	DIODE	MATSUSHITA
D2	MA143A	DIODE	MATSUSHITA
D3	MA143A	DIODE	MATSUSHITA
D4	MA143A	DIODE	MATSUSHITA
J4	SCV1743-001	CONNECTOR	
CN14	SCV2447-010	CONNECTOR	10 PIN
AN4	SC45205-003	C.WIRE ASS'Y	

5.15 SW1 board assembly list 65
SCK2424-06-00A

65□□□□□□

Symbol No.	Part No.	Part Name	Description
S11	SCV1639-001	PUSH SWITCH	VTR
S12	SCV0516-A15JB2	TOGGLE SWITCH	AUTO WHITE
S13	SCV0337-002	TOGGLE SWITCH	ZEBRA
CN15	SCV2447-008	CONNECTOR	8 PIN

5.16 SW2 board assembly list 66
SCK2316-07-00A

66□□□□□□

Symbol No.	Part No.	Part Name	Description
LD1	SLB-26UR5	L.E.D.	
R1	QRD161J-152	C.RESISTOR	1.5K 1/6W
S2	SC43656-175	SPACER	
S21	SCV1313-001	TOGGLE SWITCH	OPERATE
CN33	SSV1209-L02	CONNECTOR	2 PIN
CN34	SCV1978-L02	CONNECTOR	2 PIN

5.17 SW3 board assembly list 67
SCK2316-08-00A

67□□□□□□

Symbol No.	Part No.	Part Name	Description
S31	SCV1639-001	PUSH SWITCH	Q REC
CN34	SCV1978-L02	CONNECTOR	2 PIN
CN35	SCV1978-L03	CONNECTOR	3 PIN

5.18 SW4 board assembly list 68
SCK2316-09-00A

68□□□□□□

Symbol No.	Part No.	Part Name	Description
S41	SCV0516-A13HB2	TOGGLE SWITCH	GAIN
S42	SCV0516-A18JB2	TOGGLE SWITCH	DIPE SELECT
S43	SCV0337-002	TOGGLE SWITCH	MODE
S44	SCV0338-002	TOGGLE SWITCH	W.BAL
CN35	SCV1978-L03	CONNECTOR	3 PIN
CN36	SCV2447-010	FPC CONNECTOR	10 PIN

5.19 SW5 board assembly list 69
SCK2316-10-00A

69□□□□□□

Symbol No.	Part No.	Part Name	Description
S51	SCV1639-001	PUSH SWITCH	FWD
S52	SCV1639-001	PUSH SWITCH	REV
CN25	SCV1978-L03	CONNECTOR	3 PIN

5.20 BNC board assembly list 70
SCK2316-11-00A

70□□□□□□

Symbol No.	Part No.	Part Name	Description
R1	QRD161J-750	C.RESISTOR	75 1/6W
R2	QRD161J-102	C.RESISTOR	1.0K 1/6W
CN32	SCV1978-L03	CONNECTOR	GENLOCK INPUT

5.1 P.DR [PAL] board assembly list 5 1 P

SCK2423-03-P0A for E version 5 1 P □□□□□

Symbol No.	Part No.	Part Name	Description
IC1	CXD1265R	I.C.(M)	SONY
IC2	MN5198	I.C.(M)	MATSUSHITA
IC3	NJM78L15UA-TE1	I.C.(M)	JRC
IC5	TC74HC251AF	I.C.(M)	TOSHIBA
IC6	MC74HC74AF	I.C.(M)	MOTOROLA
IC7	MC74HC08AF	I.C.(M)	MOTOROLA
IC8	MC74HC14AF	I.C.(M)	MOTOROLA
IC9	MC74HC02AF	I.C.(M)	MOTOROLA
IC10	MC74HC00AF	I.C.(M)	MOTOROLA
IC11	TC7SU04F	I.C.(M)	TOSHIBA
IC12	TC74HCU04AF	I.C.(M)	TOSHIBA
IC101	MC74HC04AF	I.C.(M)	MOTOROLA
IC102	MN3112SA	I.C.(M)	MATSUSHITA
IC201	MC74HC04AF	I.C.(M)	MOTOROLA
IC202	MN3112SA	I.C.(M)	MATSUSHITA
IC301	MC74HC04AF	I.C.(M)	MOTOROLA
IC302	MN3112SA	I.C.(M)	MATSUSHITA
Q1	2SB1219(QR)	TRANSISTOR	MATSUSHITA
Q101	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q102	2SA1462Y3Y4	TRANSISTOR	NEC
Q103	2SC3735(45)	TRANSISTOR	NEC
Q201	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q202	2SA1462Y3Y4	TRANSISTOR	NEC
Q203	2SC3735(45)	TRANSISTOR	NEC
Q301	2SD1820(QR)	TRANSISTOR	MATSUSHITA
Q302	2SA1462Y3Y4	TRANSISTOR	NEC
Q303	2SC3735(45)	TRANSISTOR	NEC
D1	MA335	DIODE	MATSUSHITA
D2	MA335	DIODE	MATSUSHITA
D3	MA142A	DIODE	MATSUSHITA
D4	MA142A	DIODE	MATSUSHITA
D101	MA742	DIODE	MATSUSHITA
D102	MA742	DIODE	MATSUSHITA
D103	MA142A	DIODE	MATSUSHITA
D201	MA742	DIODE	MATSUSHITA
D202	MA742	DIODE	MATSUSHITA
D203	MA142A	DIODE	MATSUSHITA
D301	MA742	DIODE	MATSUSHITA
D302	MA742	DIODE	MATSUSHITA
D303	MA142A	DIODE	MATSUSHITA
R1	NRSA02J-151	M.G.RESISTOR	150 1/10W
R2	NRSA02J-561	M.G.RESISTOR	560 1/10W
R3	NRSA02J-220	M.G.RESISTOR	22 1/10W
R4	NRSA02J-471	M.G.RESISTOR	470 1/10W
R5	NRSA02J-561	M.G.RESISTOR	560 1/10W
R6	NRSA02J-220	M.G.RESISTOR	22 1/10W
R7	NRSA02J-220	M.G.RESISTOR	22 1/10W
R8	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R9	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R10	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R12	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R13	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R14	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R15	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R17	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R18	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R19	NRSA02J-471	M.G.RESISTOR	470 1/10W
R20	NRSA02J-471	M.G.RESISTOR	470 1/10W
R21	NRSA02J-151	M.G.RESISTOR	150 1/10W
R22	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R23	NRSA02J-271	M.G.RESISTOR	270 1/10W
R24	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R25	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R26	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R27	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R29	NRSA02J-562	M.G.RESISTOR	5.6K 1/10W
R30	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R31	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R32	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R33	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R34	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R35	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R36	NRSA02J-681	M.G.RESISTOR	680 1/10W
R37	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R38	NRSA02J-472	M.G.RESISTOR	4.7K 1/10W
R39	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R40	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R41	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R42	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R45	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R46	NRSA02J-122	M.G.RESISTOR	1.2K 1/10W
R101	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R102	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R103	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R104	NRSA02J-100	M.G.RESISTOR	10 1/10W
R105	NRSA02J-100	M.G.RESISTOR	10 1/10W
R106	NRSA02J-100	M.G.RESISTOR	10 1/10W
R107	NRSA02J-100	M.G.RESISTOR	10 1/10W
R108	NRSA02J-821	M.G.RESISTOR	820 1/10W
R201	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R202	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R203	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R204	NRSA02J-100	M.G.RESISTOR	10 1/10W
R205	NRSA02J-100	M.G.RESISTOR	10 1/10W
R206	NRSA02J-100	M.G.RESISTOR	10 1/10W
R207	NRSA02J-100	M.G.RESISTOR	10 1/10W
R208	NRSA02J-821	M.G.RESISTOR	820 1/10W
R301	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R302	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R303	NRSA02J-103	M.G.RESISTOR	10K 1/10W
R304	NRSA02J-100	M.G.RESISTOR	10 1/10W
R305	NRSA02J-100	M.G.RESISTOR	10 1/10W
R306	NRSA02J-100	M.G.RESISTOR	10 1/10W
R307	NRSA02J-100	M.G.RESISTOR	10 1/10W
R308	NRSA02J-821	M.G.RESISTOR	820 1/10W
VR1	NVP1415-102	TRIM.RESISTOR	1K HP
VR2	NVP1415-501	TRIM.RESISTOR	500 SHP
VR3	NVP1415-501	TRIM.RESISTOR	500 CP
VR4	NVP1415-203	TRIM.RESISTOR	20K Eoo
VR101	NVP1415-203	TRIM.RESISTOR	20K B Vsub
VR201	NVP1415-203	TRIM.RESISTOR	20K G Vsub
VR301	NVP1415-203	TRIM.RESISTOR	20K R Vsub
C1	NEA11EM-106	E.CAPACITOR	10 25V

[P. DR]

Symbol No.	Part No.	Part Name	Description	
C2	NEA11AM-336	E.CAPACITOR	33	10V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NEA11EM-106	E.CAPACITOR	10	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEA11CM-476	E.CAPACITOR	47	16V
C10	NCT03CH-100	CER.CAPACITOR	10P	50V
C11	NCT03CH-100	CER.CAPACITOR	10P	50V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCT03CH-100	CER.CAPACITOR	10P	50V
C14	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C15	NCT03CH-100	CER.CAPACITOR	10P	50V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCT03CH-100	CER.CAPACITOR	10P	50V
C18	NCB21EK-473	CER.CAPACITOR	0.047	25V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NEA11AM-336	E.CAPACITOR	33	10V
C24	NEF11AM-156	TAN.CAPACITOR	15	10V
C25	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NEF11AM-156	TAN.CAPACITOR	15	10V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCB21HK-103	CER.CAPACITOR	0.010	50V
C30	NCT03CH-101	CER.CAPACITOR	100P	50V
C31	NCT03CH-101	CER.CAPACITOR	100P	50V
C32	NCB21EK-473	CER.CAPACITOR	0.047	25V
C34	NCB21EK-473	CER.CAPACITOR	0.047	25V
C35	NCT03CH-680	CER.CAPACITOR	68P	50V
C36	NCB21EK-473	CER.CAPACITOR	0.047	25V
C38	NEA11CM-476	E.CAPACITOR	47	16V
C39	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C40	NEA11AM-336	E.CAPACITOR	33	10V
C41	NCB21EK-473	CER.CAPACITOR	0.047	25V
C42	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C43	NEF11AM-156	TAN.CAPACITOR	15	10V
C44	NEA10JM-337	E.CAPACITOR	330	6.3V
C45	NEA10JM-337	E.CAPACITOR	330	6.3V
C47	NCT03CH-221	CER.CAPACITOR	220P	50V
C48	NCT03CH-221	CER.CAPACITOR	220P	50V
C49	NCT03CH-151	CER.CAPACITOR	150P	50V
C50	NCT03CH-151	CER.CAPACITOR	150P	50V
C51	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C52	NCB21EK-473	CER.CAPACITOR	0.047	25V
C53	NCT03CH-150	CER.CAPACITOR	15P	50V
C101	NEA11HM-105	E.CAPACITOR	1.0	50V
C102	NEA11EM-106	E.CAPACITOR	10	25V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C105	NCT03CH-100	CER.CAPACITOR	10P	50V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NCB21EK-473	CER.CAPACITOR	0.047	25V
C108	NEN11HM-105	NP.CAPACITOR	1.0	50V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NCB21EK-473	CER.CAPACITOR	0.047	25V
C201	NEA11HM-105	E.CAPACITOR	1.0	50V
C202	NEA11EM-106	E.CAPACITOR	10	25V
C203	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C204	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C205	NCT03CH-100	CER.CAPACITOR	10P	50V
C206	NCB21EK-473	CER.CAPACITOR	0.047	25V
C207	NCB21EK-473	CER.CAPACITOR	0.047	25V
C208	NEN11HM-105	NP.CAPACITOR	1.0	50V
C209	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	NCB21EK-473	CER.CAPACITOR	0.047	25V
C301	NEA11HM-105	E.CAPACITOR	1.0	50V
C302	NEA11EM-106	E.CAPACITOR	10	25V
C303	NCB21EK-473	CER.CAPACITOR	0.047	25V
C304	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C305	NCT03CH-100	CER.CAPACITOR	10P	50V
C306	NCB21EK-473	CER.CAPACITOR	0.047	25V
C307	NCB21EK-473	CER.CAPACITOR	0.047	25V
C308	NEN11HM-105	NP.CAPACITOR	1.0	50V
C309	NCB21EK-473	CER.CAPACITOR	0.047	25V
C310	NCB21EK-473	CER.CAPACITOR	0.047	25V
L1	SSV1330-150	COIL	15μH	
L2	SSV1330-150	COIL	15μH	
L3	SSV1330-150	COIL	15μH	
LC1	SCV1804-222	EMI FILTER		
LC2	SCV1804-222	EMI FILTER		
LC3	SCV1804-222	EMI FILTER		
X1	CE41212-001	CRYSTAL	28.375MHz	
CN6	SSV1321-015	CONNECTOR	15 PIN	
CN7	SSV1321-015	CONNECTOR	15 PIN	
CN8	SSV1321-015	CONNECTOR	15 PIN	
CN9	SSV1321-020	CONNECTOR	20 PIN	
TP1	SCV1880-001	TEST POINT		

5.8 P.SE [PAL] board assembly list 58P
SCK2422-01-E0A for E version 58P□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	MC14053BF	I.C.(M)	MOTOROLA
IC4	MC74HC367F	I.C.(M)	MOTOROLA
IC5	TC4W53F	I.C.(M)	TOSHIBA
IC6	LM319M	I.C.(M)	NATIONAL SEMI
IC7	TC4S81F	I.C.(M)	TOSHIBA
IC101	AD817AR	I.C.(M)	ANALOG DEVICES
IC201	AD817AR	I.C.(M)	ANALOG DEVICES
IC301	AD817AR	I.C.(M)	ANALOG DEVICES
IC401	MC14577CF	I.C.(M)	MOTOROLA
IC402	MC14577CF	I.C.(M)	MOTOROLA
IC404	AN614	I.C.(M)	MATSUSHITA
IC405	MC14053BF	I.C.(M)	MOTOROLA
IC406	MC14053BF	I.C.(M)	MOTOROLA
IC407	AN614	I.C.(M)	MATSUSHITA
IC408	TC4S69F	I.C.(M)	TOSHIBA
IC501	JCS0023	I.C.(M)	
IC502	MC74HC04AF	I.C.(M)	MOTOROLA
IC503	TC7SU04F	I.C.(M)	TOSHIBA
IC504	TC7SU04F	I.C.(M)	TOSHIBA
IC505	NJM2068MD	I.C.(M)	JRC
IC506	MC74HC4538AF	I.C.(M)	MOTOROLA
IC507	MC74HC04AF	I.C.(M)	MOTOROLA
IC508	TC4S69F	I.C.(M)	TOSHIBA
IC601	TC7S00F	I.C.(M)	TOSHIBA
IC602	NJM2207M	I.C.(M)	JRC
IC701	MC14577CF	I.C.(M)	MOTOROLA
IC702	TC4S81F	I.C.(M)	TOSHIBA
Q2	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q3	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q4	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q7	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q9	DTC124EU	TRANSISTOR	ROHM
Q11	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q102	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q103	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q104	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q105	2SK209(L)	F.E.T.	TOSHIBA
Q107	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q108	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q109	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q110	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q111	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q203	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q204	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q205	2SK209(L)	F.E.T.	TOSHIBA
Q207	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q208	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q210	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q211	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q302	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q303	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q304	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q305	2SK209(L)	F.E.T.	TOSHIBA
Q307	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q308	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q310	2SC3932(ST)	TRANSISTOR	MATSUSHITA

Symbol No.	Part No.	Part Name	Description
Q311	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q402	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q403	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q404	2SK209(L)	F.E.T.	TOSHIBA
Q405	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q406	2SK209(L)	F.E.T.	TOSHIBA
Q407	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q409	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q410	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q601	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q602	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q603	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q604	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q605	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q606	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q607	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q608	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q609	2SA1532(BC)	TRANSISTOR	MATSUSHITA
Q701	2SJ163(Q.R)	F.E.T.	MATSUSHITA
Q702	2SA1532(BC)	TRANSISTOR	MATSUSHITA
D1	MA143A	DIODE	MATSUSHITA
D401	MA143A	DIODE	MATSUSHITA
D501	MA335	DIODE	MATSUSHITA
D502	MA335	DIODE	MATSUSHITA
D503	MA335	DIODE	MATSUSHITA
D504	MA335	DIODE	MATSUSHITA
D505	MA142A	DIODE	MATSUSHITA
D601	MA143A	DIODE	MATSUSHITA
D701	MA742	DIODE	MATSUSHITA
R4	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R6	NRVA02D-2702	M.F.RESISTOR	27.0K 1/10W
R8	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R9	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R10	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R13	NRSA02J-153	M.G.RESISTOR	15K 1/10W
R14	NRVA02D-2201	M.F.RESISTOR	2.20K 1/10W
R15	NRVA02D-3301	M.F.RESISTOR	3.30K 1/10W
R16	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R19	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R20	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R21	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R22	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R23	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R24	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R25	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R26	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R27	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R28	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R29	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R30	NRVA02D-2200	M.F.RESISTOR	220 1/10W
R31	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R32	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W
R34	NRVA02D-2202	M.F.RESISTOR	22.0K 1/10W
R35	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R36	NRSA02J-101	M.G.RESISTOR	100 1/10W
R37	NRVA02D-1002	M.F.RESISTOR	10.0K 1/10W
R38	NRVA02D-1001	M.F.RESISTOR	1.00K 1/10W

[P. SE]

Symbol No.	Part No.	Part Name	Description	
R39	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R40	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R41	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R42	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R43	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R44	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R45	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R46	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R47	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R48	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R49	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R50	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R51	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R52	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R53	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R54	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R55	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R56	NRSA02J-330	M.G.RESISTOR	33	1/10W
R57	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R58	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R59	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R60	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R61	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R62	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R63	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R64	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R65	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R66	NRSA02J-101	M.G.RESISTOR	100	1/10W
R67	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R103	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R104	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R105	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R106	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R107	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R108	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R111	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R112	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R113	NRSA02J-101	M.G.RESISTOR	100	1/10W
R114	NRSA02J-101	M.G.RESISTOR	100	1/10W
R115	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R116	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R117	NRSA02J-101	M.G.RESISTOR	100	1/10W
R118	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R119	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R123	NRVA02D-8201	M.F.RESISTOR	8.20K	1/10W
R125	NRSA02J-101	M.G.RESISTOR	100	1/10W
R127	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R203	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R204	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R205	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R206	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R207	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R208	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R211	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R212	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R213	NRSA02J-101	M.G.RESISTOR	100	1/10W
R214	NRSA02J-101	M.G.RESISTOR	100	1/10W
R215	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R218	NRVA02D-5600	M.F.RESISTOR	560	1/10W

Symbol No.	Part No.	Part Name	Description	
R219	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R223	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R225	NRSA02J-101	M.G.RESISTOR	100	1/10W
R227	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R303	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R304	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R305	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R306	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R307	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R308	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R311	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R312	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R313	NRSA02J-101	M.G.RESISTOR	100	1/10W
R314	NRSA02J-101	M.G.RESISTOR	100	1/10W
R315	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R318	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R319	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R323	NRVA02D-8201	M.F.RESISTOR	8.20K	1/10W
R325	NRSA02J-101	M.G.RESISTOR	100	1/10W
R327	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R408	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R409	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R410	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R411	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R412	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R413	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R414	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R416	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R417	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R418	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R419	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R420	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R421	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R422	NRVA02D-82R0	M.F.RESISTOR	82.0	1/10W
R423	NRSA02J-683	M.G.RESISTOR	68K	1/10W
R424	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R425	NRVA02D-8201	M.F.RESISTOR	8.20K	1/10W
R426	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R427	NRVA02D-1201	M.F.RESISTOR	1.20K	1/10W
R428	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R429	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R430	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R431	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R432	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R433	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R434	NRVA02D-1800	M.F.RESISTOR	180	1/10W
R435	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R436	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R437	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R438	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R439	NRSA02J-330	M.G.RESISTOR	33	1/10W
R440	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R441	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R442	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R443	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R444	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R445	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R446	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R447	NRSA02J-220	M.G.RESISTOR	22	1/10W

Symbol No.	Part No.	Part Name	Description	
R448	NRSA02J-220	M.G.RESISTOR	22	1/10W
R449	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R451	NRSA02J-821	M.G.RESISTOR	820	1/10W
R454	NRVA02D-1500	M.F.RESISTOR	150	1/10W
R455	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R456	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R457	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R458	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R459	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R460	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R461	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R462	NRSA02J-821	M.G.RESISTOR	820	1/10W
R463	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R464	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R465	NRVA02D-1500	M.F.RESISTOR	150	1/10W
R468	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R469	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R473	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R478	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R479	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R480	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R481	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R482	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R501	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R502	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R503	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R504	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R505	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R506	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R507	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R508	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R509	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R512	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R513	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R514	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R515	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R516	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R517	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R518	NRVA02D-2200	M.F.RESISTOR	220	1/10W
R519	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R520	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R521	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R522	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R523	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R524	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R525	NRVA02D-5602	M.F.RESISTOR	56.0K	1/10W
R526	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R527	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R528	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R529	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R530	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R531	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R534	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R535	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R601	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R602	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R603	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R604	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R605	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W

Symbol No.	Part No.	Part Name	Description	
R606	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R607	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R608	NRVA02D-2201	M.F.RESISTOR	2.20K	1/10W
R609	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R610	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R611	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R612	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R613	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R614	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R615	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R616	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R617	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R618	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R619	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R620	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R621	NRVA02D-1201	M.F.RESISTOR	1.20K	1/10W
R622	NRVA02D-1201	M.F.RESISTOR	1.20K	1/10W
R623	NRVA02D-6801	M.F.RESISTOR	6.80K	1/10W
R624	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R625	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R701	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R702	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R703	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R704	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R705	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R706	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R707	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R708	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R709	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R710	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R711	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R712	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R713	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R714	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R715	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
VR1	NVP1415-202	TRIM.RESISTOR	2K	WHITE CLIP
VR2	NVP1415-501	TRIM.RESISTOR	500	BLACK SLICE
VR401	NVP1415-203	TRIM.RESISTOR	20K	SYNC LEVEL
VR402	NVP1415-501	TRIM.RESISTOR	500	Y.LEVEL
VR403	NVP1415-201NZ	V.RESISTOR	200	CHROMA BAL
VR405	NVP1415-102	TRIM.RESISTOR	1K	BURST LEVEL
VR406	NVP1415-102	TRIM.RESISTOR	1K	B-Y C.BAL
VR407	NVP1415-102	TRIM.RESISTOR	1K	R-Y C.BAL
VR408	NVP1415-102	TRIM.RESISTOR	1K	R-Y C.BAL
VR409	NVP1415-102	TRIM.RESISTOR	1K	QUAD
VR410	NVP1415-501	TRIM.RESISTOR	500	CHROMA
VR501	NVP1415-203	TRIM.RESISTOR	20K	fsc
VR502	NVP1415-203	TRIM.RESISTOR	20K	EOH
VR505	QVPB609-203	TRIM.RESISTOR	20K	H.PHASE
VR601	QVPB609-202	TRIM.RESISTOR	2K	SC FINE
VR701	QVPB609-103	TRIM.RESISTOR	10K	VF PEAK LVL
C1	NEA10GM-476	E.CAPACITOR	47	4V
C2	NCB21EK-473	CER.CAPACITOR	0.047	25V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCB21HK-103	CER.CAPACITOR	0.010	50V
C5	NEA11AM-336	E.CAPACITOR	33	10V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V

[P. SE]

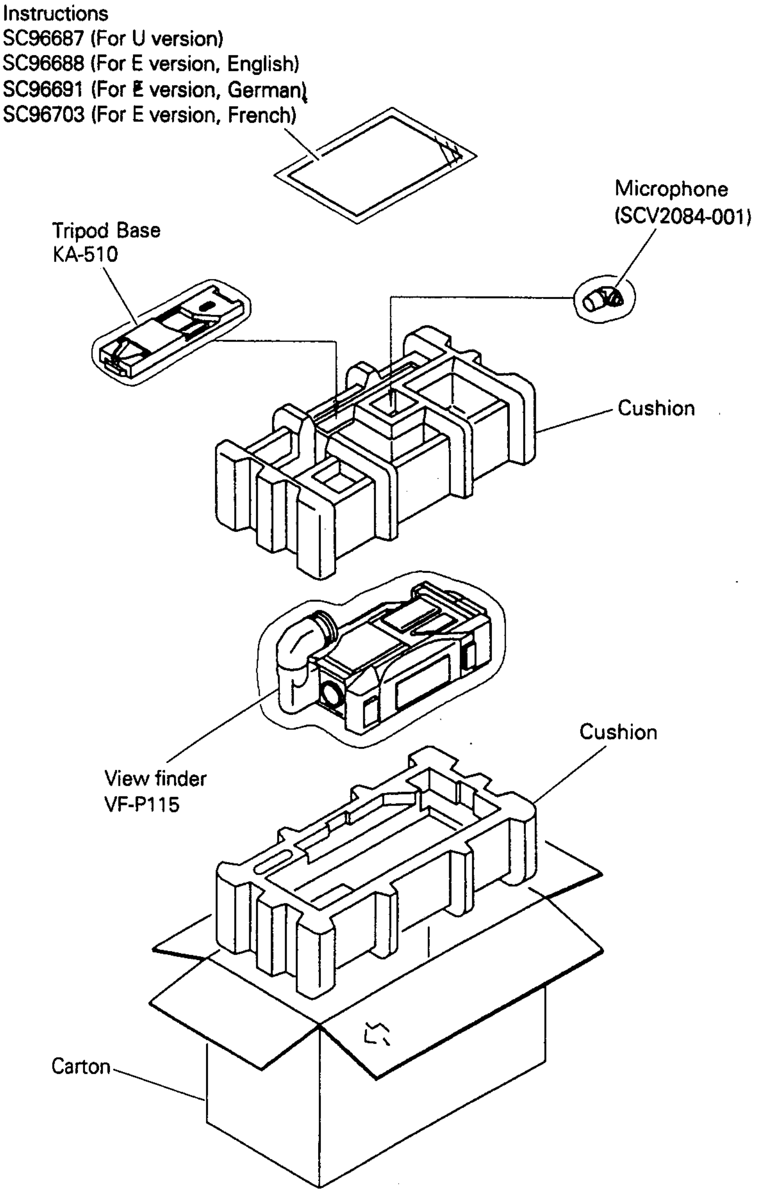
Symbol No.	Part No.	Part Name	Description	
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCT03CH-680	CER.CAPACITOR	68P	50V
C9	NEN10JM-476	NP.CAPACITOR	47	6.3V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCT03CH-470	CER.CAPACITOR	47P	50V
C15	NEA11AM-336	E.CAPACITOR	33	10V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCB21EK-473	CER.CAPACITOR	0.047	25V
C18	NEA10GM-476	E.CAPACITOR	47	4V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C21	NEA11AM-336	E.CAPACITOR	33	10V
C22	NCT03CH-101	CER.CAPACITOR	100P	50V
C23	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C24	NCB21EK-473	CER.CAPACITOR	0.047	25V
C101	NEA11AM-336	E.CAPACITOR	33	10V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NCB21EK-473	CER.CAPACITOR	0.047	25V
C105	NEA11AM-336	E.CAPACITOR	33	10V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NEA11AM-336	E.CAPACITOR	33	10V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C112	NCT03CH-470	CER.CAPACITOR	47P	50V
C113	NCB21EK-473	CER.CAPACITOR	0.047	25V
C114	NCB21EK-473	CER.CAPACITOR	0.047	25V
C201	NEA11AM-336	E.CAPACITOR	33	10V
C202	NEA11AM-336	E.CAPACITOR	33	10V
C203	NCB21EK-473	CER.CAPACITOR	0.047	25V
C204	NCB21EK-473	CER.CAPACITOR	0.047	25V
C205	NEA11AM-336	E.CAPACITOR	33	10V
C206	NCB21EK-473	CER.CAPACITOR	0.047	25V
C207	NEA11AM-336	E.CAPACITOR	33	10V
C208	NCB21EK-473	CER.CAPACITOR	0.047	25V
C212	NCT03CH-470	CER.CAPACITOR	47P	50V
C213	NCB21EK-473	CER.CAPACITOR	0.047	25V
C214	NCB21EK-473	CER.CAPACITOR	0.047	25V
C301	NEA11AM-336	E.CAPACITOR	33	10V
C303	NCB21EK-473	CER.CAPACITOR	0.047	25V
C304	NCB21EK-473	CER.CAPACITOR	0.047	25V
C305	NEA11AM-336	E.CAPACITOR	33	10V
C306	NCB21EK-473	CER.CAPACITOR	0.047	25V
C307	NEA11AM-336	E.CAPACITOR	33	10V
C308	NCB21EK-473	CER.CAPACITOR	0.047	25V
C312	NCT03CH-470	CER.CAPACITOR	47P	50V
C313	NCB21EK-473	CER.CAPACITOR	0.047	25V
C314	NCB21EK-473	CER.CAPACITOR	0.047	25V
C402	NCT03CH-150	CER.CAPACITOR	15P	50V
C403	NCB21EK-473	CER.CAPACITOR	0.047	25V
C404	NCB21EK-473	CER.CAPACITOR	0.047	25V
C408	NCT03CH-7R0	CER.CAPACITOR	7.0P	50V
C409	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C410	NCT03CH-121	CER.CAPACITOR	120P	50V
C411	NCT03CH-560	CER.CAPACITOR	56P	50V
C412	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C413	NCB21EK-473	CER.CAPACITOR	0.047	25V
C414	NCB21EK-473	CER.CAPACITOR	0.047	25V
C415	NCT03CH-121	CER.CAPACITOR	120P	50V
C416	NCT03CH-560	CER.CAPACITOR	56P	50V

Symbol No.	Part No.	Part Name	Description	
C417	NCT03CH-150	CER.CAPACITOR	15P	50V
C418	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C419	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C420	NEA11AM-336	E.CAPACITOR	33	10V
C421	NCB21EK-473	CER.CAPACITOR	0.047	25V
C422	NCB21EK-473	CER.CAPACITOR	0.047	25V
C423	NCB21EK-473	CER.CAPACITOR	0.047	25V
C424	NCB21EK-473	CER.CAPACITOR	0.047	25V
C425	NCB21EK-473	CER.CAPACITOR	0.047	25V
C426	NEA11AM-336	E.CAPACITOR	33	10V
C427	NCB21EK-473	CER.CAPACITOR	0.047	25V
C428	NCT03CH-151	CER.CAPACITOR	150P	50V
C429	NEA11AM-336	E.CAPACITOR	33	10V
C430	NCB21EK-473	CER.CAPACITOR	0.047	25V
C431	NCT03UJ-120	CER.CAPACITOR	12P	50V
C432	NCB21HK-103	CER.CAPACITOR	0.010	50V
C433	NCT03CH-220	CER.CAPACITOR	22P	50V
C434	NCB21EK-473	CER.CAPACITOR	0.047	25V
C435	NCB21HK-272	CER.CAPACITOR	2700P	50V
C436	NCB21EK-473	CER.CAPACITOR	0.047	25V
C437	NEA11AM-336	E.CAPACITOR	33	10V
C438	NCB21EK-473	CER.CAPACITOR	0.047	25V
C439	NCB21EK-473	CER.CAPACITOR	0.047	25V
C440	NCB21EK-473	CER.CAPACITOR	0.047	25V
C441	NCT03CH-150	CER.CAPACITOR	15P	50V
C442	NCT03CH-330	CER.CAPACITOR	33P	50V
C443	NCT03UJ-330	CER.CAPACITOR	33P	50V
C444	NCB21HK-103	CER.CAPACITOR	0.010	50V
C446	NCB21EK-473	CER.CAPACITOR	0.047	25V
C448	NCB21EK-473	CER.CAPACITOR	0.047	25V
C501	NCB21EK-473	CER.CAPACITOR	0.047	25V
C502	NCB21HK-103	CER.CAPACITOR	0.010	50V
C503	NCB21EK-473	CER.CAPACITOR	0.047	25V
C504	NCT03CH-102	CER.CAPACITOR	1000P	50V
C505	NCT03CH-102	CER.CAPACITOR	1000P	50V
C506	NCB21HK-103	CER.CAPACITOR	0.010	50V
C507	NCB21EK-473	CER.CAPACITOR	0.047	25V
C508	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C509	NEA11AM-336	E.CAPACITOR	33	10V
C510	NCB21EK-473	CER.CAPACITOR	0.047	25V
C511	NCB21EK-473	CER.CAPACITOR	0.047	25V
C512	NCB21EK-473	CER.CAPACITOR	0.047	25V
C513	NCB21EK-473	CER.CAPACITOR	0.047	25V
C514	NEA11AM-336	E.CAPACITOR	33	10V
C515	NCB21EK-473	CER.CAPACITOR	0.047	25V
C516	NCT03CH-221	CER.CAPACITOR	220P	50V
C517	NCT03CH-221	CER.CAPACITOR	220P	50V
C518	NCB21HK-103	CER.CAPACITOR	0.010	50V
C519	NCB21EK-473	CER.CAPACITOR	0.047	25V
C520	NCB21EK-473	CER.CAPACITOR	0.047	25V
C521	NCB21EK-473	CER.CAPACITOR	0.047	25V
C522	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C523	NCT03CH-560	CER.CAPACITOR	56P	50V
C524	NCB21EK-473	CER.CAPACITOR	0.047	25V
C525	NCB21EK-473	CER.CAPACITOR	0.047	25V
C526	NCB21EK-473	CER.CAPACITOR	0.047	25V
C527	NEA11AM-336	E.CAPACITOR	33	10V
C528	NCB21EK-473	CER.CAPACITOR	0.047	25V
C529	NCT03CH-101	CER.CAPACITOR	100P	50V

Symbol No.	Part No.	Part Name	Description
C532	NCB21EK-473	CER.CAPACITOR	0.047 25V
C533	NCT03CH-470	CER.CAPACITOR	47P 50V
C534	NCT03CH-220	CER.CAPACITOR	22P 50V
C535	NCB21EK-473	CER.CAPACITOR	0.047 25V
C601	NEN10JM-476	NP.CAPACITOR	47 6.3V
C602	NCT03CH-100	CER.CAPACITOR	10P 50V
C603	NCT03CH-101	CER.CAPACITOR	100P 50V
C604	NEA11AM-336	E.CAPACITOR	33 10V
C605	NCT03CH-220	CER.CAPACITOR	22P 50V
C606	NCB21EK-473	CER.CAPACITOR	0.047 25V
C607	NCT03CH-820	CER.CAPACITOR	82P 50V
C608	NCB21EK-473	CER.CAPACITOR	0.047 25V
C609	NCT03CH-101	CER.CAPACITOR	100P 50V
C610	NCT03CH-560	CER.CAPACITOR	56P 50V
C611	NCT03CH-101	CER.CAPACITOR	100P 50V
C612	NCB21EK-473	CER.CAPACITOR	0.047 25V
C613	NCB21EK-473	CER.CAPACITOR	0.047 25V
C614	NEA11HM-105	E.CAPACITOR	1.0 50V
C615	NEA11AM-336	E.CAPACITOR	33 10V
C701	NEA11AM-336	E.CAPACITOR	33 10V
C702	NCB21EK-473	CER.CAPACITOR	0.047 25V
C703	NEA10GM-476	E.CAPACITOR	47 4V
C704	NCB21EK-473	CER.CAPACITOR	0.047 25V
C705	NCB21EK-473	CER.CAPACITOR	0.047 25V
C706	NEA10GM-476	E.CAPACITOR	47 4V
C707	NCT03CH-100	CER.CAPACITOR	10P 50V
C708	NCB21EK-473	CER.CAPACITOR	0.047 25V
L101	SCV1950-470	PEAKING COIL	47μH
L102	SCV1950-220	PEAKING COIL	22μH
L103	SCV1950-470	PEAKING COIL	47μH
L401	SCV1950-220	PEAKING COIL	22μH
L402	SCV1950-560	PEAKING COIL	56μH
L403	SCV1950-820	PEAKING COIL	82μH
L601	SCV1950-390	PEAKING COIL	39μH
DL1	SCV2528-001Z	DELAY LINE	150nsec
DL2	SCV2528-001Z	DELAY LINE	150nsec
DL101	SCV1694-001	DELAY LINE	
DL201	SCV2526-001	DELAY LINE	160nsec
DL301	SCV1694-001	DELAY LINE	
DL401	SCV2528-001Z	DELAY LINE	150nsec
DL402	SCV2528-001Z	DELAY LINE	150nsec
X1	SCV0348-002	CRYSTAL	17.73447MHz
X2	CE41212-001	CRYSTAL	28.375MHz
S1	SCV0389-011	SLIDE SWITCH	SC COARSE
S2	SSV2664	SLID SW	ZEBRA
CN29	SCV2089-020	CONNECTOR	20 PIN
CN30	SSV1321-020	CONNECTOR	20 PIN
CN31	SCV1848-016	CONNECTOR	16 PIN
CN32	SCV1770-003	CONNECTOR	3 PIN
TP1	SCV1880-001	TEST POINT	

Symbol No.	Part No.	Part Name	Description
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1201-001	TEST POINT	
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1201-001	TEST POINT	
TP12	SCV1201-001	TEST POINT	
TP13	SCV1880-001	TEST POINT	

SECTION 6
REPACKING


Instructions
SC96687 (For U version)
SC96688 (For E version, English)
SC96691 (For E version, German)
SC96703 (For E version, French)
Microphone
(SCV2084-001)
Tripod Base
KA-510
Cushion
Cushion
View finder
VF-P115
Carton

Note: Accessories above are subject to change without notice according to sales versions.

SECTION 1

DISASSEMBLY AND SERVICE CAUTIONS

- For separating the VTR section from the camera section, refer to the section 1 "SERVICE CAUTIONS AND DISASSEMBLY" in the first half of this service manual.
- For other items, refer to the section 1 "GENERAL DESCRIPTION AND DISASSEMBLY" of the service manual No. 9277/No. 9288 for the BR-S422U/E.

SECTION 2

MECHANISM ADJUSTMENT

- For mechanism adjustment of the VTR section, refer to the section 2 "MECHANISM ADJUSTMENT" of the service manual No. 9277/No. 9288 for the BR-S422U/E.

SECTION 3

ELECTRICAL ADJUSTMENT

- For electrical adjustment of the VTR section, refer to the section 3 "ELECTRICAL ADJUSTMENT" of the service manual No. 9277/No. 9288 for the BR-S422U/E.

SECTION 4
DIAGRAMS AND CIRCUIT BOARDS

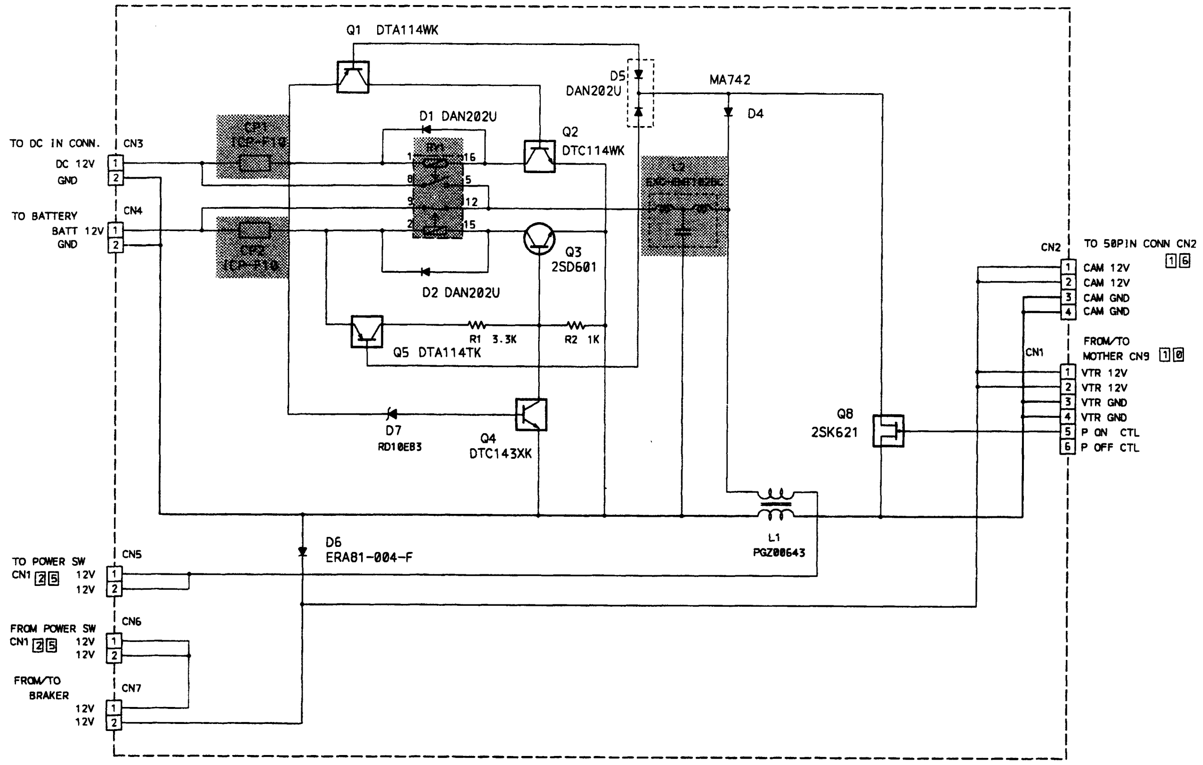
- This section illustrates only the circuit boards different from those of the BR-S422 besides the overall wiring diagram. Circuit boards different from the BR-S422 are as follows.

  · POWER CTL board $\boxed{1}\boxed{4}$ 8-2
  · S/S board $\boxed{0}\boxed{5}$ 8-4
  · Overall wiring diagram 8-5

  For other circuit boards, refer to the service manual No. 9277/No. 9288 for the BR-S422 since they are the same as those of the BR-S422.
- The following circuit boards are not used in the GY-X2B since they are provided for exclusive use of the BR-S422.
  · 50-PIN board $\boxed{1}\boxed{6}$
  · POWER SW board $\boxed{2}\boxed{5}$

4.1 POWER CTL BOARD SCHEMATIC DIAGRAM (NTSC)

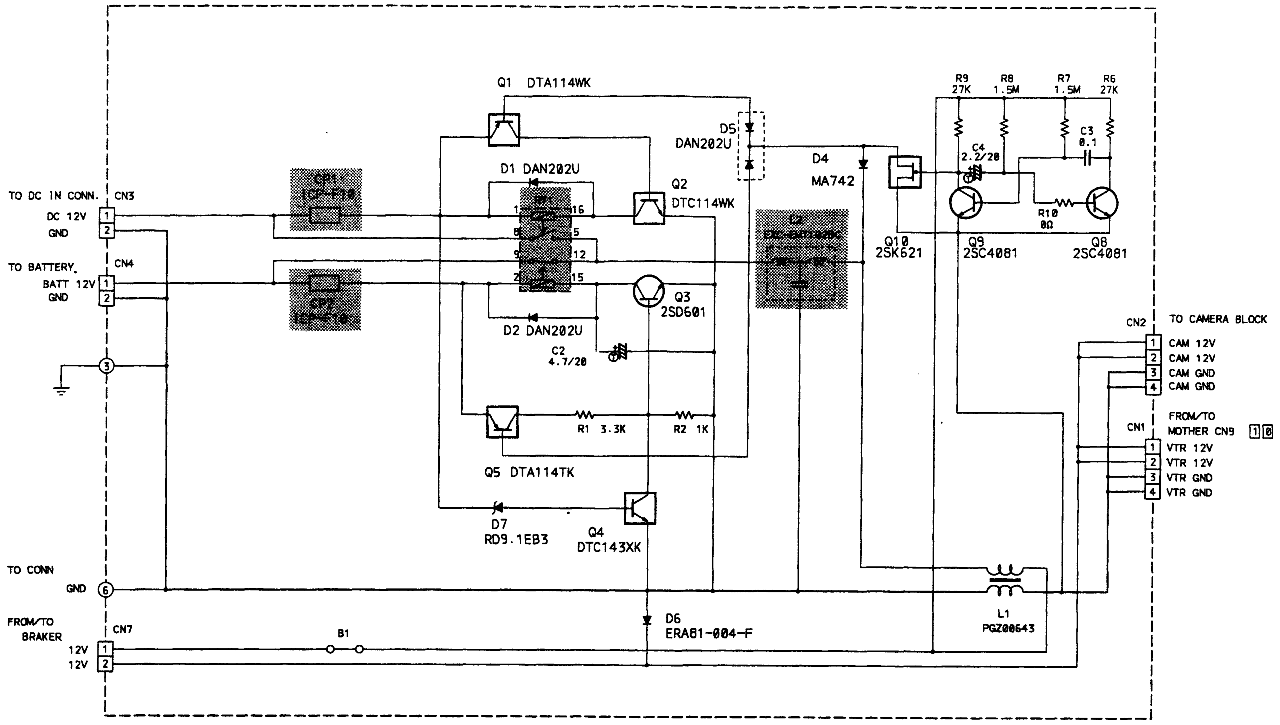
Shaded (⚠) parts are critical for safety.
Replace only with specified part numbers.


Q1 DTA114WK
D5 DAN202U
MA742
D4
D1 DAN202U
Q2 DTC114WK
TO DC IN CONN.
CN3
DC 12V
GND
CP1 ICP-F10
RY1
L2
TO BATTERY
CN4
BATT 12V
GND
CP2 ICP-F10
Q3 2SD601
D2 DAN202U
R1 3.3K
R2 1K
Q5 DTA114TK
D7 RD10EB3
Q4 DTC143XK
Q8 2SK621
CN2
TO 50PIN CONN CN2 16
CAM 12V
CAM 12V
CAM GND
CAM GND
CN1
FROM/TO MOTHER CN9 10
VTR 12V
VTR 12V
VTR GND
VTR GND
P ON CTL
P OFF CTL
D6 ERA81-004-F
L1 PGZ00643
TO POWER SW CN1 25
CN5
12V
12V
FROM POWER SW CN1 25
CN6
12V
12V
FROM/TO BRAKER
CN7
12V
12V

4.2 POWER CTL BOARD SCHEMATIC DIAGRAM (PAL)

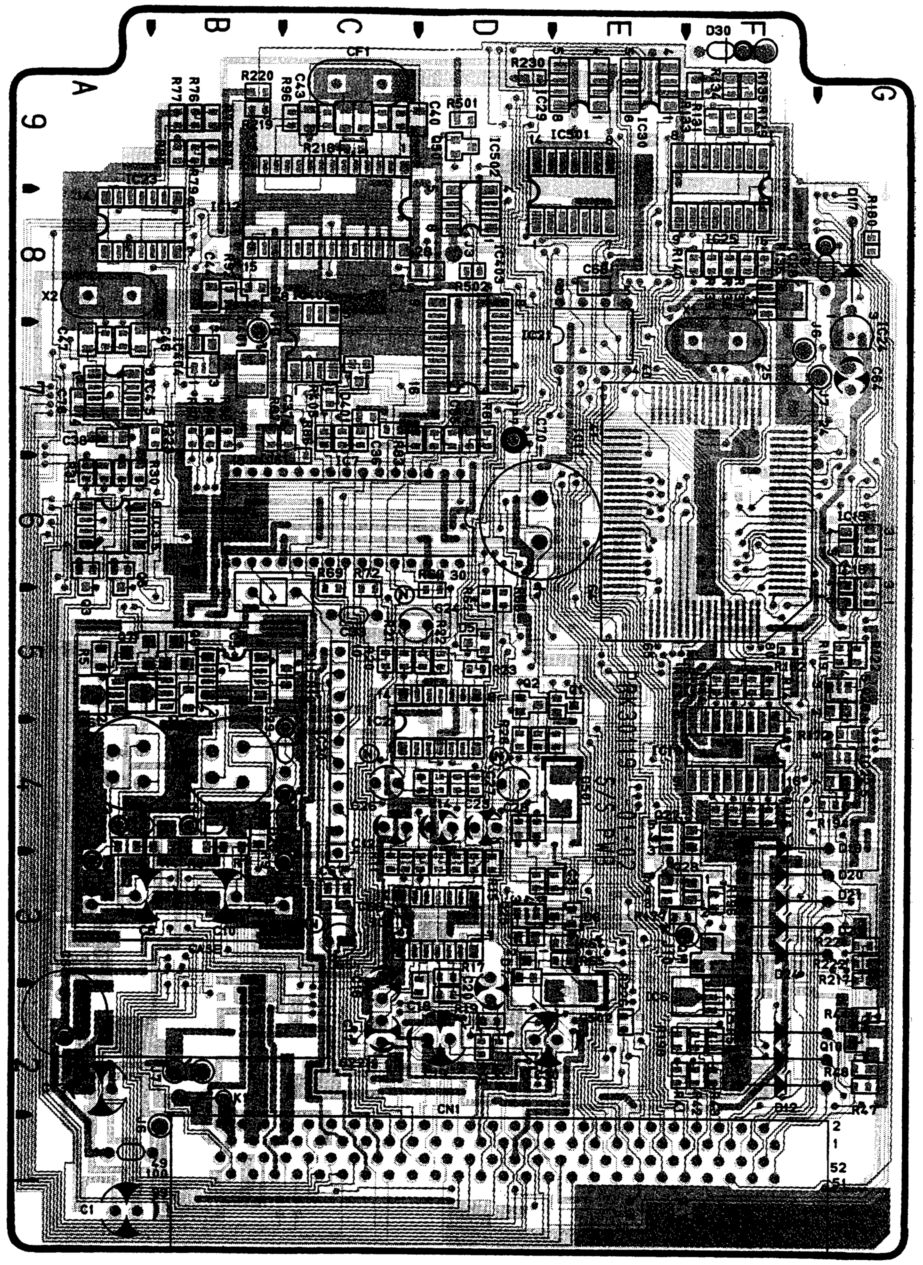
● **SAFETY PRECAUTION**

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

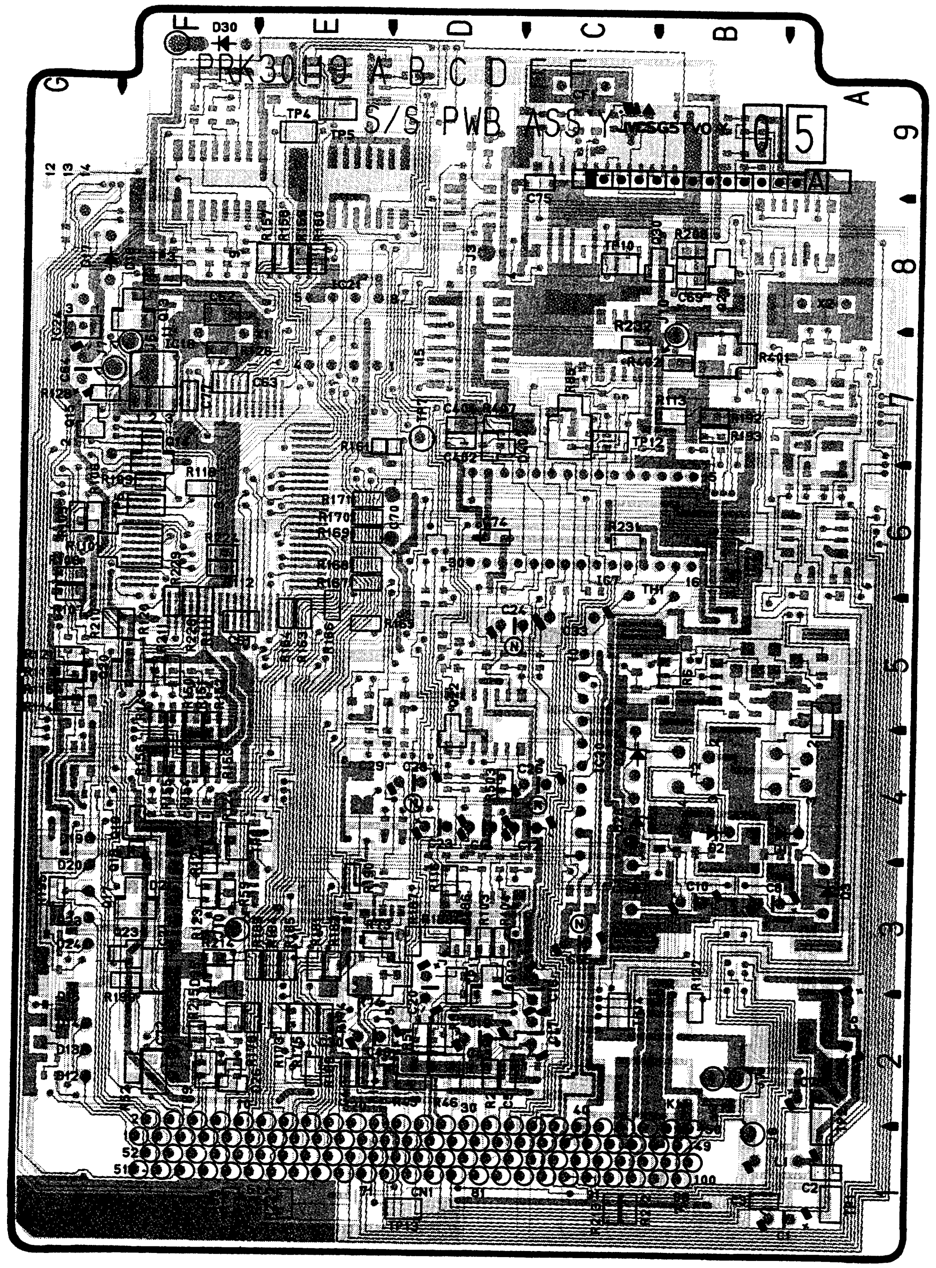

Q1 DTA114WK
D5 DAN202U
D4 MA742
R9 27K
R8 1.5M
R7 1.5M
R6 27K
C4 2.2/20
C3 0.1
R10 0Ω
Q10 2SK621
Q9 2SC4081
Q8 2SC4081
D1 DAN202U
Q2 DTC114WK
TO DC IN CONN.
CN3
DC 12V
GND
CP1 ICP-F10
RY1
L2
TO BATTERY
CN4
BATT 12V
GND
CP2 ICP-F10
Q3 2SD601
D2 DAN202U
C2 4.7/20
R1 3.3K
R2 1K
Q5 DTA114TK
D7 RD9.1EB3
Q4 DTC143XK
CN2
TO CAMERA BLOCK
CAM 12V
CAM 12V
CAM GND
CAM GND
CN1
FROM/TO MOTHER CN9 10
VTR 12V
VTR 12V
VTR GND
VTR GND
TO CONN
GND
FROM/TO BRAKER
CN7
12V
12V
B1
D6 ERA81-004-F
L1 PGZ00643

4.3 S/S CIRCUIT BOARD

— Component Side (A) —

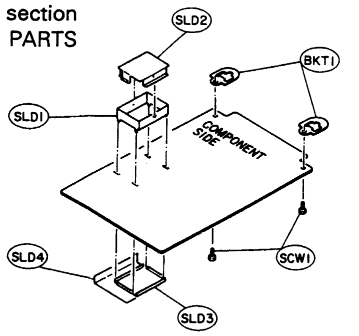

A
B
C
D
E
F
G
D30
CF1
R220
R230
CN1
1
2
3
4
5
6
7
8
9

— Solder Side (B) —

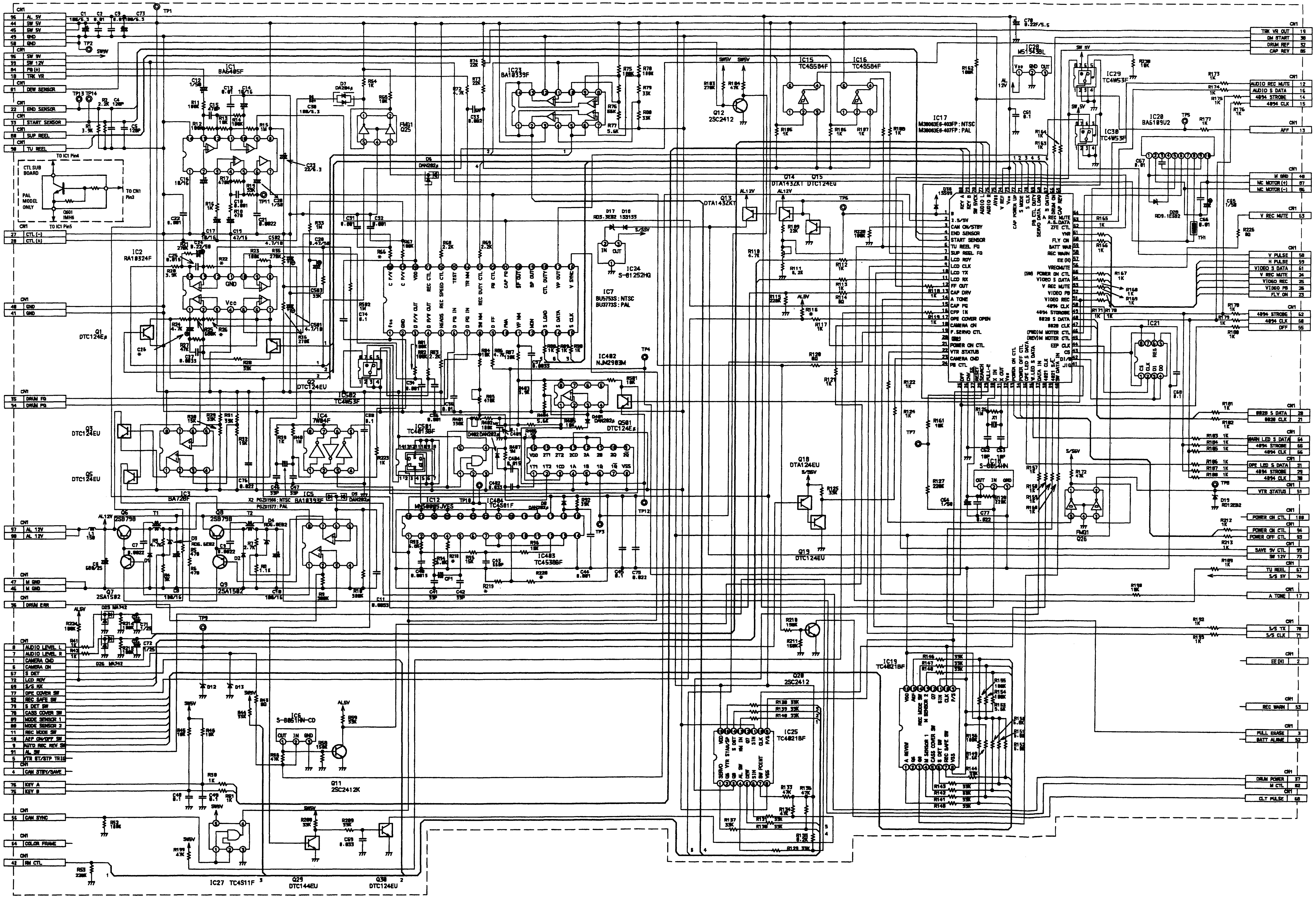

G
F
E
D
C
B
A
D30
PRK30090 A B C D E F
S/S PWB ASSY
5
CN1
1
2
3
4
5
6
7
8
9

- **Shield Case, Brackets on the board**

(For part numbers, refer to the section "6.1 S/S BOARD ASSEMBLY PARTS LIST".


SLD2
BKT1
SLD1
COMPONENT SIDE
SLD4
SCW1
SLD3

4.4 S/S BOARD SCHEMATIC DIAGRAM


TP1
CN1
AL 5V
SW 5V
GND
SW 9V
SW 12V
PB(+)
TRK VR
DEW SENSOR
END SENSOR
START SENSOR
SUP REEL
TU REEL
CTL SUB BOARD
PAL MODEL ONLY
CTL(-)
CTL(+)
IC1 BA6405F
IC2 RA10324F
IC3 BA7207
IC4 7W04F
IC5 BA10393F
IC6 S-8051HN-CD
IC7 BU5753S : NTSC BU3773S : PAL
IC12 MN50005JVES
IC15 TC4S584F
IC16 TC4S584F
IC17 M38063E6-403FP : NTSC M38063E6-407FP : PAL
IC18 S-8054HN
IC19 TC4021BF
IC20 BA6109U2
IC21
IC23 BA10339F
IC24 S-81252HG
IC25 TC4021BF
IC27 TC4S11F
IC28 M51943BL
IC29 TC4W53F
IC30 TC4W53F
IC401 TC4013BF
IC402 NJM2903M
IC403 TC4538BF
IC404 TC4S81F
IC502 TC4W53F
Q1 DTC124Eμ
Q2 DTC124EU
Q3 DTC124EU
Q5 DTC124EU
Q6 2SB798
Q7 2SA1582
Q8 2SB798
Q9 2SA1582
Q11 2SC2412K
Q12 2SC2412
Q13 DTA143ZKT
Q14 DTA143ZKT
Q15 DTC124EU
Q18 DTA124EU
Q19 DTC124EU
Q20 2SC2412
Q25 FMG1
Q26 FMG1
Q29 DTC144EU
Q30 DTC124EU
Q501 DTC124Eμ
AL 12V
M GND
DRUM FG
DRUM PG
DRUM ERR
AUDIO LEVEL L
AUDIO LEVEL R
CAMERA CHD
CAMERA ON
S DET
LCD RDY
S/S RX
OPE COVER SW
REC SAFE SW
S DET SW
CASS COVER SW
MODE SENSOR 1
MODE SENSOR 2
REC MODE SW
AEP ON/OFF SW
AUTO REC REV SW
AL SW
VTR ST/STP TRIG
CAM STBY/SAVE
KEY A
KEY B
CAM SYNC
COLOR FRAME
RM CTL
TRK VR OUT
DM START
DRUM REF
CAP REV
AUDIO REC MUTE
AUDIO S DATA
4094 STROBE
4094 CLK
AFF
M GND
MC MOTOR(+)
MC MOTOR(-)
V REC MUTE
V PULSE
H PULSE
VIDEO S DATA
V REC MUTE
VIDEO REC
VIDEO PB
FLY ON
4094 STROBE
4094 CLK
OFF
8828 S DATA
8828 CLK
WARN LED S DATA
OPE LED S DATA
VTR STATUS
POWER ON CTL
POWER OFF CTL
SAVE 5V CTL
SW 12V
TU REEL
S/S 5V
A TONE
S/S TX
S/S CLK
EE(H)
REC WARN
FULL ERASE
BATT ALARM
DRUM POWER
M CTL
CLY PULSE
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14

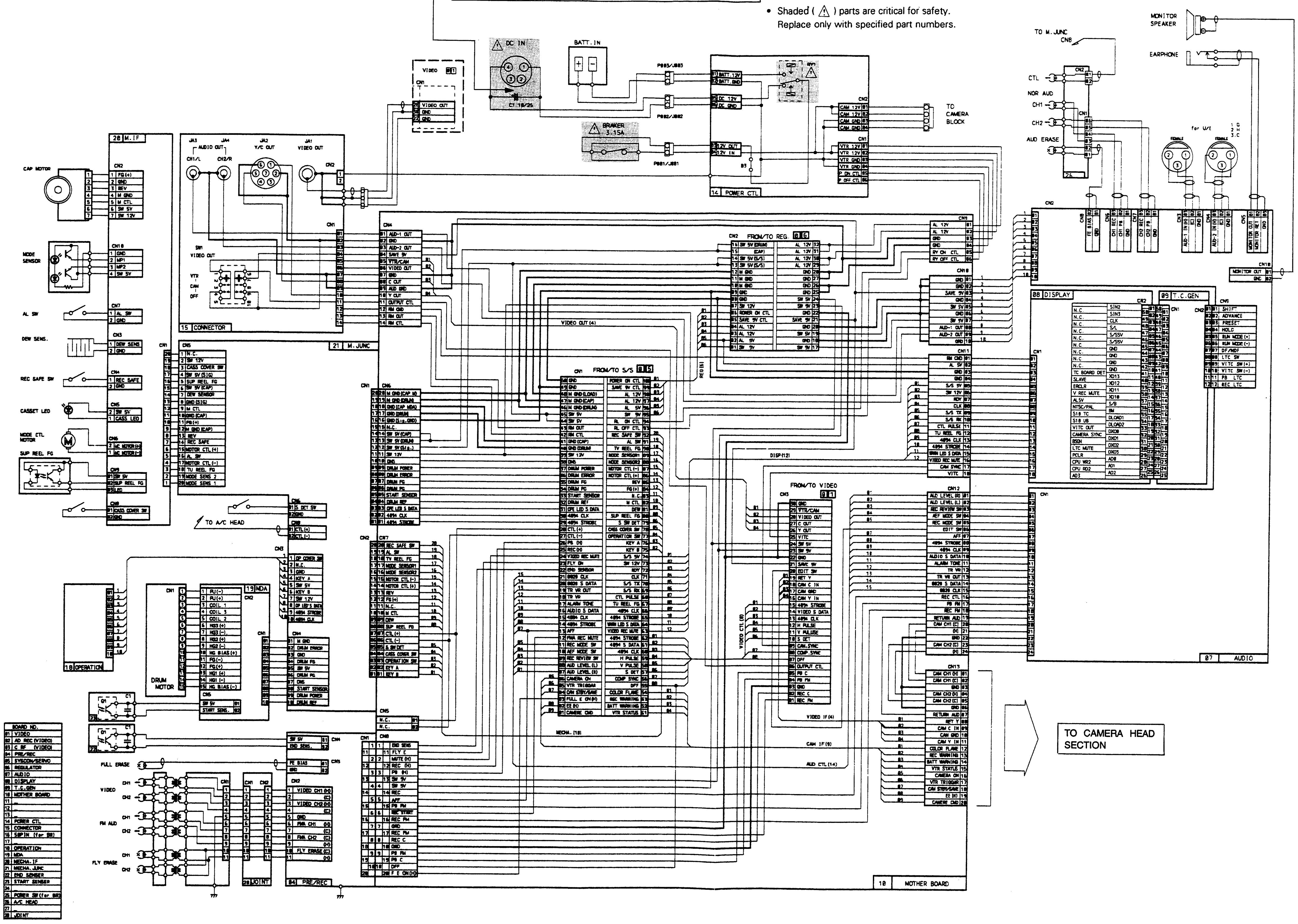
***Marks**

Symbol	R17	R22	R26	R66	R116	R218	R219	R220	R231	C26
NTSC	470K	56K	82K	100K	100K	0	0	OPEN	0	0.47/50
PAL	820K	82K	22K	270K	33K	OPEN	OPEN	0	OPEN	0.22/50

4.5 OVERALL WIRING (NTSC)

	Part No.	Part Name	Description
⚠ C1	QER41EM-106	E. CAPACITOR	10 25V

- Shaded (⚠) parts are critical for safety. Replace only with specified part numbers.

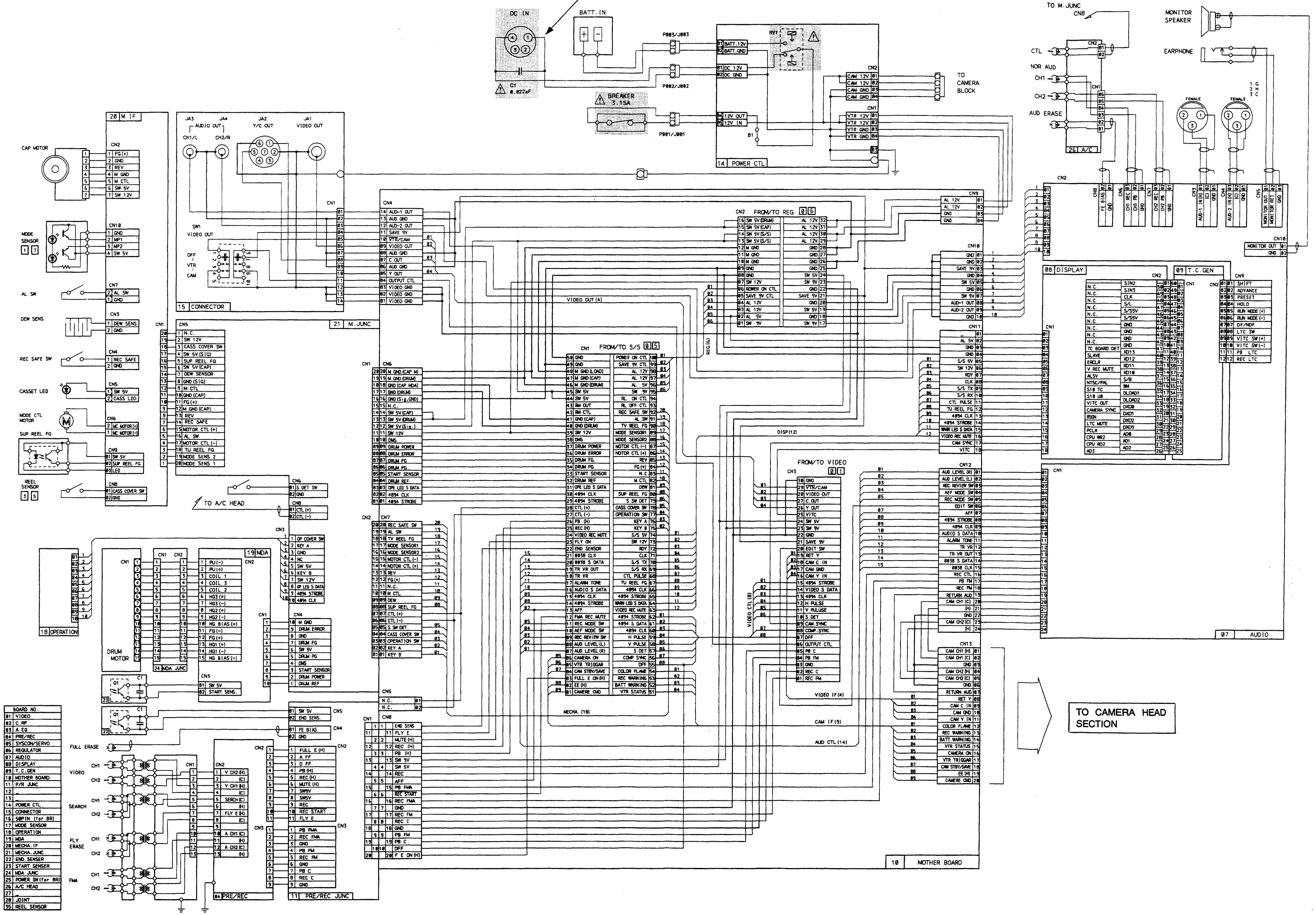

DC IN
C1 10/25
BATT. IN
BRAKER 3.15A
VIDEO 01
VIDEO OUT
P003/J003
P002/J002
P001/J001
14 POWER CTL
TC CAMERA BLOCK
MONITOR SPEAKER
EARPHONE
TO M. JUNC CN8
CTL
NOR AUD
CH1
CH2
AUD ERASE
26
20 M. IF
CAP MOTOR
MODE SENSOR
AL SW
DEW SENS.
REC SAFE SW
CASSET LED
MODE CTL MOTOR
SUP REEL FG
15 CONNECTOR
AUDIO OUT
Y/C OUT
VIDEO OUT
21 M. JUNC
TO A/C HEAD
19 MDA
DRUM MOTOR
18 OPERATION
FULL ERASE
VIDEO
FM AUD
FLY ERASE
28 JOINT
04 PRE/REC
FROM/TO REG. 06
FROM/TO S/S 05
FROM/TO VIDEO 01
VIDEO OUT (4)
DISP (12)
MECHA. (18)
VIDEO IF (4)
CAM IF (9)
AUD CTL (14)
08 DISPLAY
09 T.C.GEN
07 AUDIO
10 MOTHER BOARD
TO CAMERA HEAD SECTION

BOARD NO.	
01	VIDEO
02	AD REC (VIDEO)
03	C RF (VIDEO)
04	PRE/REC
05	SYSCON/SERVO
06	REGULATOR
07	AUDIO
08	DISPLAY
09	T.C.GEN
10	MOTHER BOARD
11	–
12	–
13	–
14	POWER CTL
15	CONNECTOR
16	50PIN (for BR)
17	–
18	OPERATION
19	MDA
20	MECHA. IF
21	MECHA. JUNC
22	END SENSER
23	START SENSER
24	–
25	POWER SW (for BR)
26	A/C HEAD
27	–
28	JOINT

4.6 OVERALL WIRING (PAL)

	Part No.	Part Name	Description
⚠ C1	QCF11HP-223	CER. CAPACITOR	0.022 50V

- Shaded (⚠) parts are critical for safety.
  Replace only with specified part numbers.



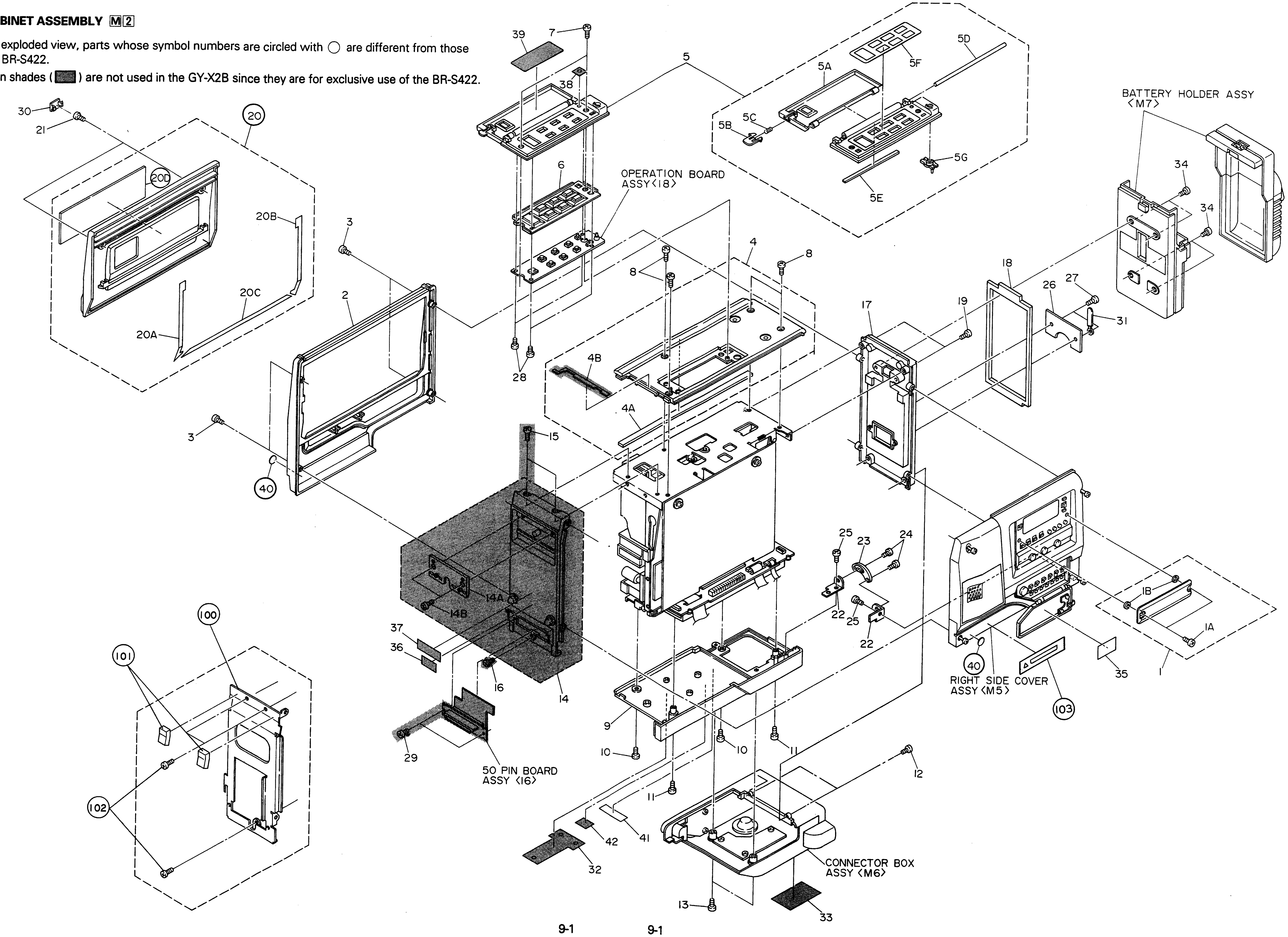
BOARD NO.	
01	VIDEO
02	C RF
03	A EQ
04	PRE/REC
05	SYSCON/SERVO
06	REGULATOR
07	AUDIO
08	DISPLAY
09	T.C.GEN
10	MOTHER BOARD
11	P/R JUNC
12	–
13	–
14	POWER CTL
15	CONNECTOR
16	50PIN (for BR)
17	MODE SENSOR
18	OPERATION
19	MDA
20	MECHA.IF
21	MECHA.JUNC
22	END SENSER
23	START SENSER
24	MDA JUNC
25	POWER SW(for BR)
26	A/C HEAD
27	–
28	JOINT
35	REEL SENSOR

DC IN
C1 0.022uF
BATT. IN
P003/J003
P002/J002
P001/J001
BREAKER 3.15A
14 POWER CTL
TO CAMERA BLOCK
TO M.JUNC CN8
CTL
NOR AUD
CH1
CH2
AUD ERASE
26 A/C
MONITOR SPEAKER
EARPHONE
FEMALE
20 M IF
CAP MOTOR
MODE SENSOR
AL SW
DEW SENS
REC SAFE SW
CASSET LED
MODE CTL MOTOR
SUP REEL FG
REEL SENSOR
15 CONNECTOR
JA3 JA4 JA2 JA1
AUDIO OUT
Y/C OUT
VIDEO OUT
CH1/L CH2/R
SW1 VIDEO OUT
OFF VTR CAM
21 M. JUNC
TO A/C HEAD
18 OPERATION
19 MDA
DRUM MOTOR
24 MDA JUNC
FULL ERASE
VIDEO
SEARCH
FLY ERASE
FMA
04 PRE/REC
11 PRE/REC JUNC
CN2 FROM/TO REG 06
CN1 FROM/TO S/S 05
FROM/TO VIDEO 01
VIDEO OUT (4)
REG (6)
DISP (12)
VIDEO CTL (8)
VIDEO IF (4)
CAM IF (9)
AUD CTL (14)
MECHA. (18)
10 MOTHER BOARD
08 DISPLAY
09 T.C.GEN
07 AUDIO
TO CAMERA HEAD SECTION

SECTION 5
EXPLODED VIEW AND PARTS LIST

5.1 CABINET ASSEMBLY M2

- In the exploded view, parts whose symbol numbers are circled with ○ are different from those of the BR-S422.
- Parts in shades (▨) are not used in the GY-X2B since they are for exclusive use of the BR-S422.


39
7
5
5A
5F
5D
5C
5B
5G
5E
38
6
OPERATION BOARD ASSY<18>
BATTERY HOLDER ASSY <M7>
34
34
30
21
20
20D
20B
20C
20A
3
2
4
8
8
28
4B
4A
18
26
27
31
17
19
15
3
40
14A
14B
37
36
16
14
25
23
24
22
25
22
22
1B
1A
1
40
RIGHT SIDE COVER ASSY <M5>
103
35
9
10
10
11
11
12
29
50 PIN BOARD ASSY <16>
100
101
102
41
42
32
CONNECTOR BOX ASSY <M6>
13
33

No. 60096

GY-X2B

VTR SECTION

NOTE:
The VTR section of the GY-X2B is what the BR-S422 S-VHS VTR is modified. therefore, this section describes only the points different from the BR-S422. For further details of the VTR section, refer to the service manual (No. 9277/No. 9288) for the BR-S422U/E issued by JVC Video Communications Division together with Service Bulletins and other information related to the BR-S422.

TABLE OF CONTENTS

Section Title Page

1. SERVICE CAUTIONS AND DISASSEMBLY .... (Refer to the section 1 of the Service Manual for BR-S422.)
2. MECHANISM ADJUSTMENT .... (Refer to the section 2 of the Service Manual for BR-S422.)
3. ELECTRICAL ADJUSTMENT .... (Refer to the section 3 of the Service Manual for BR-S422.)
4. DIAGRAMS AND CIRCUIT BOARDS 8-1
    4.1 POWER CTL BOARD (NTSC) 8-2
    4.2 POWER CTL BOARD (PAL) 8-2P
    4.3 S/S CIRCUIT BOARD 8-3
    4.4 S/S BOARD 8-4
    4.5 OVERALL WIRING DIAGRAM (NTSC) 8-5N
    4.6 OVERALL WIRING DIAGRAM (PAL) 8-5P
5. EXPLODED VIEWS AND PARTS LIST 9-1
6. ELECTRICAL PARTS LIST 10-1
    6.1 S/S BOARD ASSEMBLY PARTS LIST 05 10-2
    6.2 POWER CTL BOARD ASSEMBLY PARTS LIST 14 10-5

Note:
- Parts with ⚠ mark are critical for safety. Replace them only with parts of the specified part numbers.
- For parts excluded from the following table, refer to the service manual for the BR-S422.

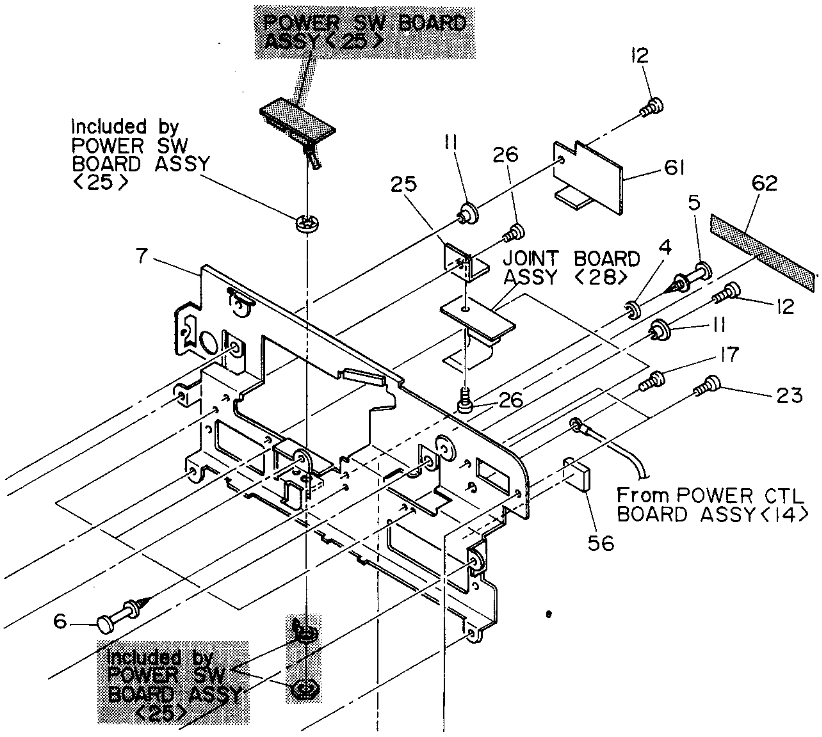
- **Cabinet Assembly list** M2

M2MM□□□□

Symbol No.	Part No.	Part Name	Description
4	PRD30964B-01	Top Cover Ass'y	
20	PRD20465A-06	Cassette Panel Ass'y	U version
	PRD20465E-06	Cassette Panel Ass'y	E version
20D	PRD30986	Window	
30	PRD44259	Cap	
⚠ 40	PU53146-3	Caution Label	U version only
⚠ 41	PU53145-3	Caution Label	U version only
100	PRD30880	Front Panel	Not used for BS-S422
101	PRD30030-76	PAD	Not used for BR-S422
102	SDSP3006ZY	SCREW	M3 x 6 Not used for BR-S422
⚠ 103	SC43658-001	Caution Label	U version only

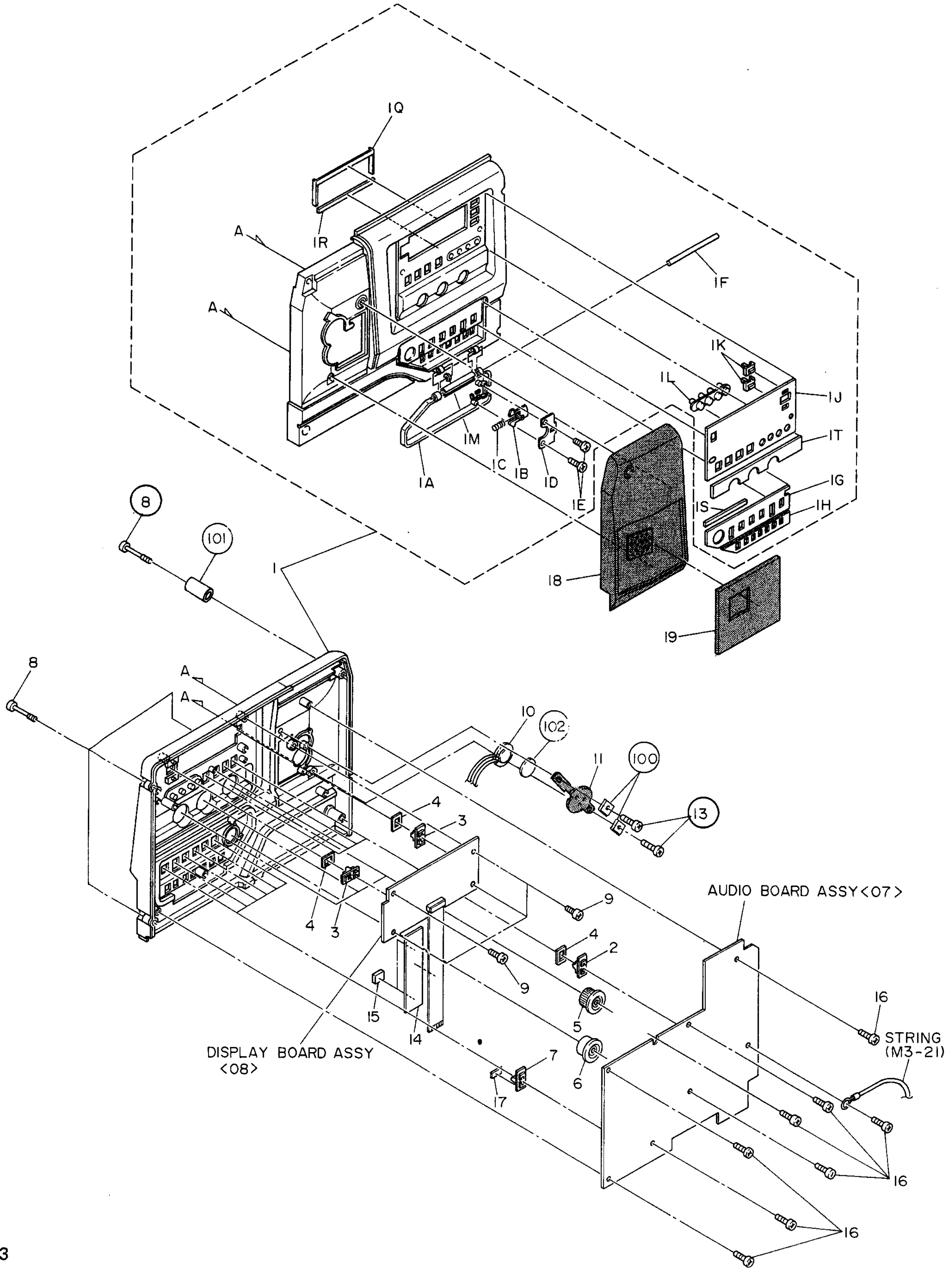
5.2 CHASSIS ASSEMBLY M3

- The POWER SW board is not used in the GY-X2B.
  Other parts are the same as those of the BR-S422.


POWER SW BOARD ASSY <25>
12
Included by POWER SW BOARD ASSY <25>
11
26
25
61
62
5
7
JOINT BOARD ASSY <28>
4
12
11
17
26
23
From POWER CTL BOARD ASSY <14>
56
6
Included by POWER SW BOARD ASSY <25>

5.3 R. SIDE COVER ASSEMBLY M5

- In the exploded view, parts whose symbol numbers are circled with ○ are different from those of the BR-S422.
- Parts in shades (▨) are not used in the GY-X2B since they are for exclusive use of the BR-S422.


1Q
A
1R
A
1F
1K
1L
1J
1T
1M
1C
1B
1D
1A
1E
1G
1S
1H
⑧
(101)
1
18
19
8
A
A
10
(102)
11
(100)
4
3
⑬
4
3
AUDIO BOARD ASSY<07>
9
4
2
9
16
5
15
14
STRING
(M3-21)
DISPLAY BOARD ASSY
<08>
7
6
17
16
16

Note:
- Parts with ⚠ mark are critical for safety. Replace them only with parts of the specified part numbers.
- For parts excluded from the following table, refer to the service manual for the BR-S422.

- **R Side Cover Assembly list** M5

M5MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
8	SC43397-009	Screw	
13	YQM3032-49	Screw	
100	SC44537-001	Bracket	
101	PRD30026-46	Collar	
102	PRD30030-90	Pad	

SECTION 6
ELECTRICAL PARTS LIST

- This section lists parts of the S/S board and the POWER CTL board which are different from those of the BR-S422. For other electrical parts, refer to the service manual No. 9277/No. 9288 for the BR-S422.

Note:
- Parts with ⚠ mark are critical for safety. Replace them only with parts of the specified part numbers.

6.1 SYSCON/SERVO board assembly list 05
〈PRK30119C-04〉

05☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	BA6405F	IC	ROHM
IC2	XRA10324F	IC	EXAR
IC3	BA728F	IC	ROHM
IC4	TC7W04F	IC	TOSHIBA
IC5	BA10393F	IC	ROHM
IC6	S-8051HN-CD-X	IC	SEIKO
IC7	BU3779S	IC	ROHM
IC12	MN50005JVES	IC	MATSUSHITA
IC15	TC4S584F	IC	TOSHIBA
IC16	TC4S584F	IC	TOSHIBA
IC17	**M38063E6-403FP**	IC	CPU, program stored (U)
IC17	M38063E6-407FP	IC	CPU, program stored (E)
IC18	S-8054HN-CB-X	IC	SEIKO
IC19	TC4021BF	IC	TOSHIBA
IC20	BA6109U2	IC	ROHM
IC21	M6M80011AP	IC	MITSUBISHI
IC23	BA10339F	IC	ROHM
IC24	S-81252HG	IC	SEIKO
IC25	TC4021BF	IC	TOSHIBA
IC27	TC4S11F	IC	TOSHIBA
IC28	M51943BML	IC	MITSUBISHI
IC29	TC4W53F	IC	TOSHIBA
IC30	TC4W53F	IC	TOSHIBA
IC402	NJM2903M	IC	JRC
IC403	TC4538BF	IC	TOSHIBA
IC404	TC4S81F	IC	TOSHIBA
IC501	TC4013BF	IC	TOSHIBA
IC502	TC4W53F	IC	TOSHIBA
Q1	DTC124EU	TRANSISTOR	ROHM
Q2	DTC124EU	TRANSISTOR	ROHM
Q3	DTC124EU	TRANSISTOR	ROHM
Q5	DTC124EU	TRANSISTOR	ROHM
Q6	2SB798	TRANSISTOR	NEC
Q7	2SA1502-XE	TRANSISTOR	SANYO
Q8	2SB798	TRANSISTOR	NEC
Q9	2SA1502-XE	TRANSISTOR	SANYO
Q11	2SC2412K(QR)	TRANSISTOR	ROHM
Q12	2SC2412K(QR)	TRANSISTOR	ROHM
Q13	DTA143ZK	TRANSISTOR	ROHM
Q14	DTA143ZK	TRANSISTOR	ROHM
Q15	DTC124EU	TRANSISTOR	ROHM
Q18	DTA124EU	TRANSISTOR	ROHM
Q19	DTC124EU	TRANSISTOR	ROHM
Q20	2SC2412K(QR)	TRANSISTOR	ROHM
Q25	FMG1	TRANSISTOR	ROHM
Q26	FMG1	TRANSISTOR	ROHM
Q29	DTC144EU	TRANSISTOR	ROHM
Q30	DTC124EU	TRANSISTOR	ROHM
Q501	DTC124EU	TRANSISTOR	ROHM
D1	ERA82-004	DIODE	FUJI ELECTRIC
D2	ERA82-004	DIODE	FUJI ELECTRIC
D3	RD5.6ESB2	ZENER DIODE	NEC
D4	RD6.8ESB2	ZENER DIODE	NEC
D5	DAN202U	DIODE	ROHM
D6	DAN202U	DIODE	ROHM
D7	DA204U	DIODE	ROHM
D8	DAN202U	DIODE	ROHM
D12	RD12EB2	ZENER DIODE	NEC
D13	RD12EB2	ZENER DIODE	NEC
D17	RD3.3EB2	ZENER DIODE	NEC
D18	1SS133	DIODE	ROHM
D19	RD12EB2	ZENER DIODE	NEC
D25	MA742	DIODE	MATSUSHITA
D26	MA742	DIODE	MATSUSHITA
D28	RD9.1ESB2	ZENER DIODE	NEC
D30	1SS99	DIODE	ROHM
D31	M1MA152A	DIODE	MOTOROLA
D401	DAN202U	DIODE	ROHM
D402	DAN202U	DIODE	ROHM
R1	NRSA63J-392N	RESISTOR	3.9KΩ 1/16W
R2	NRSA63J-222N	RESISTOR	2.2KΩ 1/16W
R3	QRSA08J-472YN	RESISTOR	4.7KΩ 1/10W
R4	QRSA08J-302YN	RESISTOR	3KΩ 1/10W
R5	QRSA08J-471YN	RESISTOR	470Ω 1/10W
R6	QRSA08J-471YN	RESISTOR	470Ω 1/10W
R7	QRSA08J-272YN	RESISTOR	2.7KΩ 1/10W
R8	QRSA08J-112YN	RESISTOR	1.1KΩ 1/10W
R9	QRSA08J-304YN	RESISTOR	300KΩ 1/10W
R10	QRSA08J-304YN	RESISTOR	300KΩ 1/10W
R11	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R12	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R13	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R14	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R15	NRSA63J-105N	RESISTOR	1MΩ 1/16W
R16	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R17	NRSA63J-474N	RESISTOR	470KΩ 1/16W (U)
R17	NRSA63J-824N	RESISTOR	820KΩ 1/16W (E)
R18	NRSA63J-471N	RESISTOR	470Ω 1/16W
R19	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R20	NRSA63J-392N	RESISTOR	3.9KΩ 1/16W
R21	NRSA63J-274N	RESISTOR	270KΩ 1/16W
R22	NRSA63J-563N	RESISTOR	56KΩ 1/16W (U)
R22	NRSA63J-823N	RESISTOR	82KΩ 1/16W (E)
R23	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R24	NRSA63J-472N	RESISTOR	4.7KΩ 1/16W
R25	NRSA63J-684N	RESISTOR	680KΩ 1/16W
R26	**NRSA63J-823N**	RESISTOR	**82KΩ** 1/16W (U)
R26	NRSA63J-223N	RESISTOR	22KΩ 1/16W (E)
R27	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R28	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R29	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R30	NRSA63J-153N	RESISTOR	15KΩ 1/16W
R31	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R32	NRSA63J-153N	RESISTOR	15KΩ 1/16W
R33	NRSA63J-105N	RESISTOR	1MΩ 1/16W
R35	NRSA63J-274N	RESISTOR	270KΩ 1/16W
R36	NRSA63J-274N	RESISTOR	270KΩ 1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R40	NRSA63J-105N	RESISTOR	1MΩ 1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R42	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R43	NRSA63J-0R0N	RESISTOR	0Ω 1/16W
R44	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R45	NRSA63J-103N	RESISTOR	10KΩ 1/16W

Symbol No.	Part No.	Part Name	Description
R46	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R50	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R52	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R53	NRSA63J-224N	RESISTOR	220KΩ 1/16W
R56	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R58	NRSA63J-154N	RESISTOR	150KΩ 1/16W
R64	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R65	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R66	NRSA63J-104N	RESISTOR	100KΩ 1/16W(U)
R66	NRSA63J-274N	RESISTOR	270KΩ 1/16W(E)
R67	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R68	NRSA63J-222N	RESISTOR	2.2KΩ 1/16W
R69	NRSA63J-222N	RESISTOR	2.2KΩ 1/16W
R72	NRSA63J-472N	RESISTOR	4.7KΩ 1/16W
R73	NRSA63J-223N	RESISTOR	22KΩ 1/16W
R74	PU59237-223	V RESISTOR	TRACKING PRESET
R75	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R76	NRSA63J-563N	RESISTOR	56KΩ 1/16W
R77	NRSA63J-562N	RESISTOR	5.6KΩ 1/16W
R78	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R79	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R80	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R81	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R82	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R83	NRSA63J-222N	RESISTOR	2.2KΩ 1/16W
R84	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R85	PU59237-474	V RESISTOR	470K SWITCHING POINT
R86	NRSA63J-472N	RESISTOR	4.7KΩ 1/16W
R87	NRSA63J-124N	RESISTOR	120KΩ 1/16W
R88	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R89	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R90	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R92	NRSA63J-393N	RESISTOR	39KΩ 1/16W
R93	NRSA63J-682N	RESISTOR	6.8KΩ 1/16W
R94	NRSA63J-682N	RESISTOR	6.8KΩ 1/16W
R95	NRSA63J-153N	RESISTOR	15KΩ 1/16W
R96	NRSA63J-153N	RESISTOR	15KΩ 1/16W
R103	NRSA63J-274N	RESISTOR	270KΩ 1/16W
R104	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R105	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R106	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R107	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R108	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R109	NRSA63J-223N	RESISTOR	22KΩ 1/16W
R110	PU59237-472	V RESISTOR	4.7K BATTERY V DET
R111	NRSA63J-822N	RESISTOR	8.2KΩ 1/16W
R112	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R113	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R114	NRSA63J-0R0N	RESISTOR	0Ω 1/16W
R115	NRSA63J-224N	RESISTOR	220KΩ 1/16W
R116	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R117	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R118	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R119	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R120	NRSA63J-0R0N	RESISTOR	0Ω 1/16W
R121	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R122	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R123	NRSA63J-333N	RESISTOR	33KΩ 1/16W

Symbol No.	Part No.	Part Name	Description
R124	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R125	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R126	NRSA63J-105N	RESISTOR	1MΩ 1/16W
R127	NRSA63J-224N	RESISTOR	220KΩ 1/16W
R128	NRSA63J-224N	RESISTOR	220KΩ 1/16W
R129	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R130	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R131	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R133	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R134	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R135	NRSA63J-562N	RESISTOR	5.6KΩ 1/16W
R136	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R137	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R138	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R139	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R140	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R141	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R142	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R143	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R144	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R145	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R146	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R147	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R148	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R149	NRSA63J-562N	RESISTOR	5.6KΩ 1/16W
R150	NRSA63J-682N	RESISTOR	6.8KΩ 1/16W
R151	NRSA63J-682N	RESISTOR	6.8KΩ 1/16W
R152	NRSA63J-682N	RESISTOR	6.8KΩ 1/16W
R153	NRSA63J-562N	RESISTOR	5.6KΩ 1/16W
R154	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R155	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R156	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R157	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R158	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R159	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R160	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R161	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R162	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R163	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R164	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R165	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R166	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R167	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R168	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R169	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R170	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R171	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R172	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R173	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R174	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R175	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R176	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R177	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R178	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R179	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R180	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R181	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R182	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R183	NRSA63J-102N	RESISTOR	1KΩ 1/16W

Symbol No.	Part No.	Part Name	Description
R184	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R185	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R186	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R187	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R188	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R189	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R190	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R192	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R193	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R199	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R208	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R209	NRSA63J-333N	RESISTOR	33KΩ 1/16W
R210	NRSA63J-154N	RESISTOR	150KΩ 1/16W
R211	NRSA63J-154N	RESISTOR	150KΩ 1/16W
R212	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R213	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R214	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R215	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R218	NRSA63J-0R0N	RESISTOR	0Ω 1/16W (U)
R219	NRSA63J-0R0N	RESISTOR	0Ω 1/16W (U)
R220	NRSA63J-0R0N	RESISTOR	0Ω 1/16W (E)
R221	NRSA63J-473N	RESISTOR	47KΩ 1/16W
R222	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R223	NRSA63J-102N	RESISTOR	1KΩ 1/16W
R224	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R226	NRSA63J-0R0N	RESISTOR	0Ω 1/16W
R228	NRSA63J-104N	RESISTOR	100KΩ 1/16W
R230	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R401	PU59237-334	V RESISTOR	330K FRAME SERVO
R402	NRSA63J-184N	RESISTOR	180KΩ 1/16W
R403	NRSA63J-392N	RESISTOR	3.9KΩ 1/16W
R404	NRSA63J-562N	RESISTOR	5.6KΩ 1/16W
R405	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R406	NRSA63J-152N	RESISTOR	1.5KΩ 1/16W
R407	NRSA63J-105N	RESISTOR	1MΩ 1/16W
R501	NRSA63J-103N	RESISTOR	10KΩ 1/16W
R502	NRSA63J-105N	RESISTOR	1MΩ 1/16W
R503	NRSA63J-333N	RESISTOR	33KΩ 1/16W
C1	QERF0JM-107	E CAPACITOR	100μF 6.3V
C2	NCB31EK-103A	CAPACITOR	0.01μF 25V
C3	NCB31EK-103A	CAPACITOR	0.01μF 25V
C4	NCS31HJ-121A	CAPACITOR	120pF 50V
C5	NCS31HJ-121A	CAPACITOR	120pF 50V
C6	PGZ01800-687	E CAPACITOR	–600μF
C7	QCYA1HK-222	CAPACITOR	0.0022μF 50V
C8	QER41CM-107	E CAPACITOR	100μF 16V
C9	QCYA1HK-222	CAPACITOR	0.0022μF 50V
C10	QER41CM-107	E CAPACITOR	100μF 16V
C11	QCYA1HK-332	CAPACITOR	0.0033μF 50V
C12	QERF1HM-105	E CAPACITOR	1μF 50V
C13	NCB31EK-103A	CAPACITOR	0.01μF 25V
C14	QERF1CM-106	E CAPACITOR	10μF 16V
C15	NCS31HJ-471A	CAPACITOR	470pF 50V
C16	QERF1CM-106	E CAPACITOR	10μF 16V
C17	QERF1CM-106	E CAPACITOR	10μF 16V
C18	NCB31HK-102A	CAPACITOR	0.001μF 50V
C19	QERF1CM-476	E CAPACITOR	47μF 16V
C20	QERF1HM-105	E CAPACITOR	1μF 50V

Symbol No.	Part No.	Part Name	Description
C21	NCB31HK-222A	CAPACITOR	0.0022μF 50V
C22	NCB31HK-102A	CAPACITOR	0.001μF 50V
C23	QERF0JM-226	E CAPACITOR	22μF 6.3V
C24	QEPA1HM-224	NP E CAPACITOR	0.22μF 50V
C25	NCR31CK-153A	CAPACITOR	0.015μF 16V
C26	QEPA1HM-474	NP E CAPACITOR	0.47μF 50V (U)
C26	QEPA1HM-224	NP E CAPACITOR	0.22μF 50V (E)
C27	NCB31HK-332A	CAPACITOR	0.0033μF 50V
C28	QEPA1HM-474	NP E CAPACITOR	0.47μF 50V
C30	QERF0JM-107	E CAPACITOR	100μF 6.3V
C31	NCB31HK-102A	CAPACITOR	0.001μF 50V
C32	NCB31HK-102A	CAPACITOR	0.001μF 50V
C33	QFN41HJ-823	M CAPACITOR	0.082μF 50V
C34	NCB31HK-102A	CAPACITOR	0.001μF 50V
C35	NCB31HK-102A	CAPACITOR	0.001μF 50V
C36	NCB31EK-103A	CAPACITOR	0.01μF 25V
C37	NCB31HK-332A	CAPACITOR	0.0033μF 50V
C38	QCYA1EK-104	CAPACITOR	0.1μF 25V
C40	QCYA1HK-152	CAPACITOR	0.0015μF 50V
C41	QCSA1HJ-330	CAPACITOR	33pF 50V
C42	QCSA1HJ-330	CAPACITOR	33pF 50V
C43	QCSA1HJ-561	CAPACITOR	560pF 50V
C44	QCYA1HK-102	CAPACITOR	0.001μF 50V
C45	QCYA1EK-104	CAPACITOR	0.1μF 25V
C46	QCSA1HJ-330	CAPACITOR	33pF 50V
C47	QCSA1HJ-330	CAPACITOR	33pF 50V
C48	QCYA1EK-104	CAPACITOR	0.1μF 25V
C49	QCYA1EK-104	CAPACITOR	0.1μF 25V
C61	QCYA1EK-104	CAPACITOR	0.1μF 25V
C62	QCSA1HJ-100	CAPACITOR	10pF 50V
C63	QCSA1HJ-100	CAPACITOR	10pF 50V
C64	QERF1HM-105	E CAPACITOR	1μF 50V
C65	QEPA1HM-105	NP E CAPACITOR	1μF 50V
C66	QCYA1HK-103	CAPACITOR	0.01μF 50V
C67	QCYA1HK-103	CAPACITOR	0.01μF 50V
C68	QCYA1EK-104	CAPACITOR	0.1μF 25V
C69	NCB31CK-333A	CAPACITOR	0.033μF 16V
C70	QEA40HZ-224	E CAPACITOR (DOUBLE)	0.22F 5.5V
C71	NEE21EM-105RY	E CAPACITOR	1μF 25V
C72	NEE21EM-105RY	E CAPACITOR	1μF 25V
C73	QERF0JM-107	E CAPACITOR	100μF 6.3V
C74	NCF31CZ-104A	CAPACITOR	0.1μF 16V
C75	NCB31CK-223A	CAPACITOR	0.022μF 16V
C76	NCB31CK-223A	CAPACITOR	0.022μF 16V
C77	NCB31CK-223A	CAPACITOR	0.022μF 16V
C401	NFV31CJ-104AY	TF CAPACITOR	0.1μF 16V
C402	NCB31CK-333A	CAPACITOR	0.033μF 16V
C404	NCB31EK-153A	CAPACITOR	0.015μF 25V
C501	NEE21AM-475RY	E CAPACITOR	4.7μF 10V
C502	NEE21AM-475RY	E CAPACITOR	4.7μF 10V
L1	PU56181-151	COIL	150μH
⚠ CF1	PU55407	RESONATOR	
⚠ X1	PGZ00857	CRYSTAL RESONATOR	
⚠ X2	PGZ01566	CRYSTAL RESONATOR	(U)
⚠ X2	PGZ01577	CRYSTAL RESONATOR	(E)

Symbol No.	Part No.	Part Name	Description
K1	PGZ00354	FERRATE BEADS	
⚠ TH1	PU52108-2R2	POSITIVE THERMISTOR	
T1	YU41190	TRANS	
T2	YU41190	TRANS	
BKT1	PRD43842-01-01	BRACKET, X2	
SCW1	PRD30093	SCREW, X2	
SLD1	PRS40029	SHIELD PLATE	
SLD2	PRS40025	SHIELD CASE	
SLD3	PU61042	SHIELD COVER	
SLD4	PU61043	SHIELD PLATE	
TP1	PGZ01015	TEST PIN, X13 (TP1-6,8-14)	
CN1	PGZ01519-100	CONNECTOR	
	CTL SUB BOARD ASSEMBLY (E only)		
PWBA	PRK20271A	CTL SUB BOARD ASSY	
Q601	IMH6	TRANSISTOR	

6.2 POWER CTL board assembly list 1 4
〈PRK20176A-02〉

1 4 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
Q1	DTA114WK	TRANSISTOR	ROHM	
Q2	DTC114WK	TRANSISTOR	ROHM	
Q3	2SD601A	TRANSISTOR	MATSUSHITA	
Q4	DTC143XK	TRANSISTOR	ROHM	
Q5	DTA114TK	TRANSISTOR	ROHM	
Q8	2SD601A	TRANSISTOR	MATSUSHITA	
D1	DAN202K	DIODE	ROHM	
D2	DAN202K	DIODE	ROHM	
D5	DAN202K	DIODE	ROHM	
D6	ERA81-004-F	DIODE	FUJI ELECTRIC	
D7	RD9.1EB3	ZENER DIODE	NEC	
R1	QRSA08J-332YN	RESISTOR	3.3KΩ	1/10W
R2	QRSA08J-102YN	RESISTOR	1KΩ	1/10W
C2	NEE21DM-475RY	E CAPACITOR	4.7μF	20V
L1	PGZ00643	COIL		
⚠ L2	EXC-EMT102BC	N FILTER		
RY1	PGZ01743	RELAY		
CL1	PU55379	MINI CLAMP, X4		
CN1	PU58844-4	CONNECTOR		
CN2	PU58844-4	CONNECTOR		
CN3	PGZ00652-002	CONNECTOR		
⚠ CP1	ICP-F10	CIRCUIT PROTECTOR		
⚠ CP2	ICP-F10	CIRCUIT PROTECTOR		
		(E only)		
Q9	2SD601A	TRANSISTOR		
Q10	2SK621	FE TRANSISTOR		
D4	MA742	DIODE		
R6	QRSA08J-273YN	RESISTOR	27KΩ	1/10W
R7	QRSA08J-155YN	RESISTOR	1.5MΩ	1/10W
R8	QRSA08J-155YN	RESISTOR	1.5MΩ	1/10W
R9	QRSA08J-273YN	RESISTOR	27KΩ	1/10W
R10	QRSA08J-0R0Y	RESISTOR	0Ω	1/10W
C3	QCYA1EK-104	CAPACITOR	0.1μF	25V
C4	NEE21DM-225RY	E CAPACITOR	2.2μF	20V